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THE INDICATIONS FOR AND TECHNIC OF VAGINAL CESAREAN SECTION IN ECLAMPSIA *

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It was my original intention to prepare for this session a paper on the different methods of rapid evacuation of the uterus in the various toxemias of pregnancy. The invitation to participate in this symposium on eclampsia has modified my plan and I shall confine my remarks to the indications and technic of vaginal Cesarean section in eclampsia.

INDICATIONS

Vaginal Cesarean section or vaginal hysterotomy, the incision of the pregnant uterus through the vagina, is indicated in eclampsia when, in the presence of a rigid cervix, the uterus has to be rapidly emptied. It would seem as if these indications were simple enough. When the cervix is easily dilated or when there is no need for haste, other methods of emptying the uterus may be employed. When a multipara is threatened with eclampsia and the condition of the patient does not demand haste, slower methods of emptying the uterus, such as the balloon, gauze packing or manual dilatation, may be employed. But when the cervix is rigid and haste is necessary, vaginal Cesarean section is much quicker and is the method of choice.

My position in regard to vaginal Cesarean section has been misunderstood, judging from the protests which have been raised against my contention that under certain conditions the operation should be performed by the general practitioner. But careful consideration will show, I believe, that my position is correct. My claim is that in the past the practitioner has been taught to perform and expected to do any obstetric procedure which stopped short of using the knife. He was taught, for example, the indications and contraindications of high forceps, an operation calling for far more judgment and skill than vaginal Cesarean section. He was taught and has practiced for years the difficult and slow manual dilatation of the parturient os, with all its attendant danger of laceration of the cervix, as well as sepsis from the carrying upward of septic material from below. Yet the minute the practitioner is advised in the presence of a rigid cervix which will not yield to manual dilatation, when haste is imperative, to perform a clean surgical operation requiring the use of the knife, the wise ones shake their heads and speculate as to the harm that will result from such operations in unskilled hands. What operative procedure, may I ask, has not resulted in harm in certain hands, and, I may add, sometimes in supposedly skilled hands? It is not my purpose to advocate indiscriminate operating by anybody and everybody. Undoubtedly it would be better if surgery of every description could be limited to a select few in each community. Then the inexperienced operator would be heard of no more. The man who aspired to be one of those to perform surgery in a certain district would prepare himself by years of hospital work, serving a long apprenticeship under some older surgeon. Then this specialist would be ready to respond to the call of every practitioner and perform all his operations for him, obstetric as well as others. No doubt this would be an ideal condition of affairs, especially for the surgeon. But it needs no great argument to convince us that in this country, at least, such an ideal situation will not materialize in our lifetime. Even in the cities, where now it would be possible for such a condition of affairs to exist, the practitioner still persists in performing his obstetric surgery. In fact, it is about the only surgery in this age of specialism that has been left to him, or that he contends should remain his.

I am not referring to the city practitioner with the special obstetric surgeon within easy call. I am making a plea for the country practitioner, who must do the best he can, with the aid perhaps of a fellow practitioner no more skilled than himself. My contention is that less harm will be done when it becomes necessary to empty the uterus in eclampsia in the presence of a rigid cervix, by a clean-cut surgical procedure like vaginal Cesarean section, than by manual dilatation, the operation usually selected under these conditions.

My friend, Dr. Philander Harris, the originator of the only true scientific method of manual dilatation, a man of great gynecologic and obstetric experience, is able to accomplish dilatation in three-quarters of an hour even in difficult cases. Yet even he can not be entirely satisfied with the method, for reecntly he has brought forward a modification of Bossi's instrument, in which a powerful mechanical force takes the place of the fingers.

It is not a question of an hour's time in these difficult cases in which the cervix is rigid. The practitioner employs one hand until it is numb and useless. Then the other is substituted, each hand being inserted into the vagina and up to the cervix many times before dilatation is accomplished. Such manipulation means sepsis or a great chance of septic infection in every such operation. It is not uncommon for a physician to relate the history of a difficult case of eclampsia in which it required three or more hours before the cervix could be dilated, the patient being under the anesthetic all this time. For

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

my part I cannot see why obstetric surgery should not be as well done and according to as sound principles as other kinds of surgery. If practitioners are not familiar with the technic of this operation it is not an impossible task for them to acquire it.

THE TECHNIC

One assistant, besides the anesthetizer, is all that is absolutely necessary, although it is more convenient for the operator to have an assistant at each leg of the patient. If only one assistant can be secured the patient's legs can be held in the lithotomy position by an ordinary obstetric leg-holder, or a sheet passed under the popliteal spaces and over one shoulder and under the other.

Fig. 1.—Vaginal orifice and vagina dilated with the gloved hand, held in the shape of a cone.

Fig. 2.—Cervix drawn forcibly downward by volsella forceps. Transverse incision through mucosa at vaginal juncture.

The vulva and vagina should be prepared as for any other obstetric operation, and the bladder carefully emptied. With the gloved hand, held in the shape of a cone, the vaginal orifice and the vaginal canal should now be completely dilated, in the same manner but more thoroughly than is customary when the hand is introduced for the operation of manual dilatation (Fig. 1). It may be necessary with very small vaginas to employ the lateral incisions advocated by Schuchardt, but they are unnecessary in the large majority of cases, ample dilatation being secured through the use of the hand-

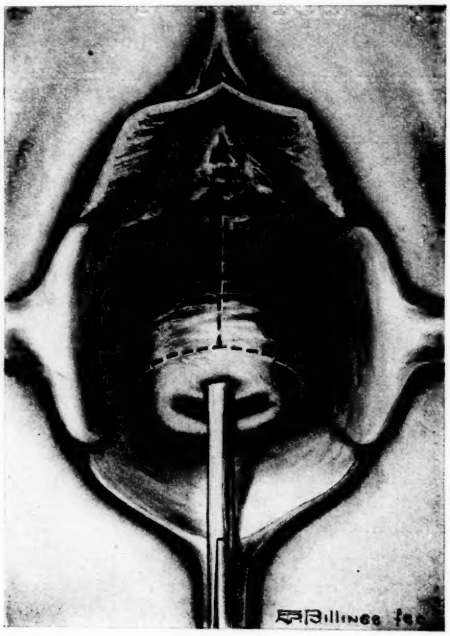

Fig. 3.—Additional longitudinal incision at times necessary to secure more room.

Fig. 4.—Vaginal and bladder walls dissected away from uterus by downward and upward strokes with sponge.

dilator as described above. However, it is essential that ample dilatation be secured, else the on-coming or after-coming head may either be arrested at the outlet or, if force be employed, tears of the perineum may result.

The perineum being depressed, the anterior lip of the cervix is seized and drawn downward to the vulva. Usually this is easily accomplished, so that the anterior vaginal wall, the field of operation, is within easy reach. When, for any reason, the cervix cannot be so drawn down, the operation is contraindicated, as it is quite essential that the anterior and posterior incisions be made aided by sight. A transverse incision long enough to take in nearly one-half the circumference of the cervix is now made through the vaginal mucosa at the vaginal juncture (Fig. 2). At times, with a small cervix, it may be necessary to add a longitudinal cut through the vaginal mucosa, thereby making an inverted T-shaped incision (Fig. 3). Usually the first incision is sufficient to allow the pushing upward of the vaginal and bladder walls by a few strokes of the sponge (Fig. 4). Pressure

Fig. 5.—Cervix grasped at each side of median line by volsella forceps. Cervix split upward for about 9 cm. in median line by stout scissors, care being taken not to distort cervix.

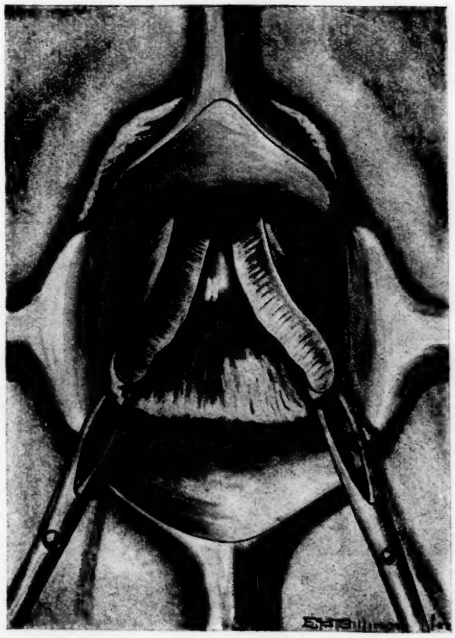

Fig. 6.—Bladder held away by retractor. Uterus split upward in median line. Scissors guided by fingers so as not to puncture bag of membranes.

Fig. 7.—Transverse incision through posterior vaginal mucosa preparatory to splitting posterior cervical lip in median line. Through transverse incision rectum and peritoneum are pushed away from uterus by sponge.

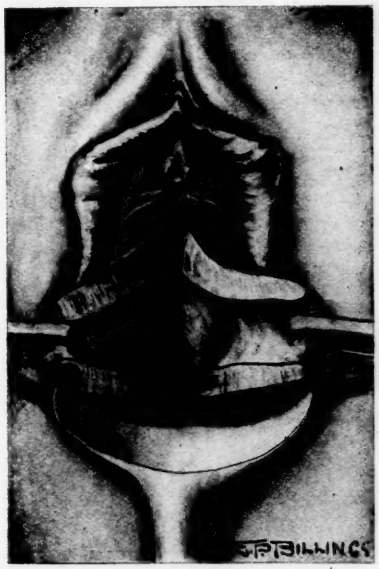

Fig. 8.—Anterior and posterior uterine walls incised. Intact bag of membranes protruding.

must be downward toward the uterus, at the same time upward; otherwise the bladder may be opened. On account of the vascularity of the tissues due to the pregnant state, no difficulty is experienced in separating the bladder, the tissues acting in a manner entirely differently from their behavior in the case of the non-pregnant

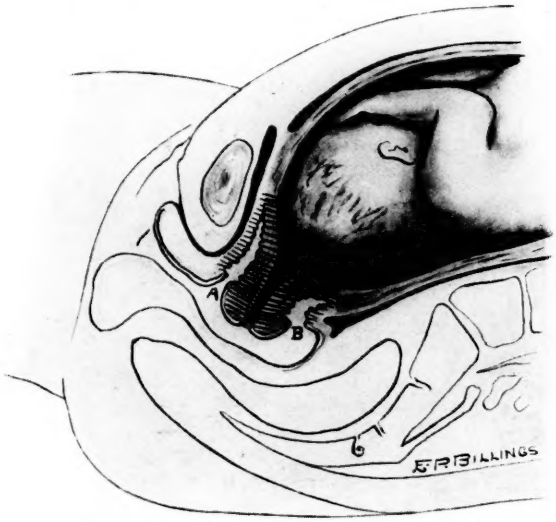

Fig. 9.—Cut showing extent to which anterior and posterior uterine walls can be incised. Peritoneum not opened. Ample space for passage of child.

Fig. 10.—Showing forceps introduced through incision. In most cases version preferable to forceps. Volsella forceps should be removed from cervix before application of forceps or version.

uterus. If for any reason there be difficulty in pushing up the anterior wall, instead of using force, the tissues next to the cervix should be snipped with the scissors.

A retractor is next inserted between the uterus and bladder and pulled sharply upward, thus holding the bladder out of harm's way. Or the bladder can be forced upward against the pubes and held there by a small

Fig. 11.—Posterior incision closed by continuous chromicized catgut introduced from posterior surface down to but not through cervical mucosa. Anterior incision being sutured and upper portion of incision being drawn down to facilitate introduction of suture.

sponge. A volsella forceps is then placed at either side of the external os and the cervix and lower uterine segment split upward in the median line by stout scissors for about nine centimeters (Fig. 5). Care should be taken

Fig. 12.—Suture of anterior and posterior incisions completed.

not to distort the cervix so that the incision can be made exactly in the median line, in which case there will be little or no hemorrhage. Also, if the point of the scissors be guided by the fingers, the cervix can be cut with-

out rupturing the membranes, a desirable thing, as usually the operation is completed by version (Fig. 6).

In case the operation is performed from the beginning of the ninth month to term, on account of the relatively large size of the child's head it is best to incise the posterior cervical lip as well. Otherwise, while there may be room enough for the passage of the hand upward where the anterior lip alone has been excised, there may not be room enough for the passage of the after-coming head, and a tear of the uterus may result; or there may be so much delay as to endanger the life of the child. A transverse incision about six or seven centimeters in length is made through the mucosa at the posterior vaginal juncture and the rectum and peritoneum pushed away by a sponge (Fig. 7). The posterior lip is then incised in the median line in the same manner as was the anterior lip and for about the same distance.

The split cervix is now exposed, as shown in Figure 8. If care has been taken the unbroken bag of membranes will be seen protruding through the opening.

Fig. 13.—Vaginal mucosa united by continuous catgut suture which should not be too tight for fear of oozing under flap. In some cases cigarette gauze drain can be placed temporarily at one angle of wound.

The extent of the anterior and posterior incisions and the space obtained for the passage of the child is illustrated by Figure 9.

The extraction of the child may be by forceps (Fig. 10) or by version. Usually the latter is preferable when haste is desirable. However, the forceps should always be at hand in case there be difficulty in extracting the after-coming head, delivery being easily accomplished by flexing the head over the perineum by means of the forceps. After the incisions have been made, and prior to the extraction of the child, the volsella forceps should be removed from the cervix, else the hand or the forceps, by pressure upward, may cause them to tear through the friable cervical tissues, thereby giving rise to ugly, ribbon-like tears.

The placenta can be removed manually or expressed by the Credé method. Usually there is no more bleeding than follows any operation which rapidly empties the uterus. Tamponade of the uterus is generally unnecessary, although it is indicated if there be postpartum hemorrhage.

The operation up to this point can be easily finished within ten minutes by one who has had experience with vaginal work, although this rapidity cannot be expected from inexperienced hands.

The incisions should be sutured with catgut, plain or chromicized, as one may prefer. To save time, continuous sutures should be employed, the needle going down to but not through the cervical mucosa (Fig. 11). When both anterior and posterior lips have been incised the latter should be sutured first (Fig. 11). Care should be taken to see that the upper point of the anterior incision is sutured; if necessary the uterine walls being pulled downward for this purpose by tenaculum forceps (Fig. 11), thus securing accurate coaptation of the cut cervical tissues (Fig. 12). Care should be taken not to suture too tightly the vaginal flap for fear of oozing and a collection beneath the flap (Fig. 13). In some cases it may be advisable to place a temporary gauze drain at one corner of and under the flap in order to secure drainage.

The after-treatment differs in no respect from an ordinary obstetric operative case. Vaginal douches are not necessary unless suppuration should occur. The cervical wounds usually heal and give very little trouble. A number of normal labors after this operation show that the cicatrices are strong enough to stand subsequent labor without rupture.

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THE TREATMENT OF ECLAMPSIA

INCLUDING A COMPARISON OF THE DANGERS OF CHLOROFORM AND ETHER IN THIS CONDITION

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In all branches of medicine to-day the prophylactic treatment, or preventive medicine, receives foremost consideration. Hence it is that in the treatment of eclampsia the toxemia of pregnancy, which threatens and may, or may not, eventuate in an eclamptic seizure, demands our chief attention. Whatever the exact etiology may prove eventually to be, it is generally agreed that the symptoms and pathologic changes of the toxemia of pregnancy and the puerperium are caused by some toxin or toxins circulating through the system, and that with this there is associated some fault in the elimination of the products of metabolism.

Accepting this as a working basis of etiology, the obstetrician may well be guided in treatment of toxemia threatening eclampsia by these five principles:

1. The products of metabolism requiring elimination should be reduced.
2. Elimination of metabolic products should be favored.
3. High blood-pressure should be reduced.
4. If the toxemia of the patient, as shown by the urine, blood-pressure and general condition, does not markedly improve under the preceding principles of treatment, or if an eclamptic seizure occurs, the uterus should be emptied.

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5. In all methods of treatment that should be avoided which will either reduce the resistance of the patient, or seriously damage any of her organs.

Let us now consider these principles more in detail.

1. In reducing the products of metabolism requiring elimination the obstetrician is brought face to face with the problem of diet for the toxemic patient. As proteid metabolism is that most often at fault, it is generally agreed that red meats should be avoided in all forms of toxemia of pregnancy and the puerperium. Although in mild degrees of toxemia, chicken and fish may be allowed, in severe forms of the condition an exclusive milk diet with large draughts of water is the diet of choice, to which are added chicken broth, fruits and green vegetables, as the toxemia diminishes. As a prophylactic measure it is our custom, during the last month of a normal pregnancy, to allow the ingestion of red meat only two or three times a week.

2. In favoring the elimination of products of metabolism, the three avenues, the skin, the urinary tract and the intestinal tract, should receive careful attention. Thus elimination through the skin by sweating, induced either by the hot-air bath or the hot wet pack, is a most useful measure in the treatment of toxemia. Elimination through the urinary tract, favored by the ingestion of large amounts of water, and elimination through the intestinal tract, favored by calomel and saline or other laxatives, and especially by colon irrigations with saline solution, are methods which are considered routine procedures in the treatment of this condition.

3. In the reduction of blood-pressure, while venesection is the choice of many obstetricians, and was formerly

Fig. 1.—Liver of eclamptic patient.

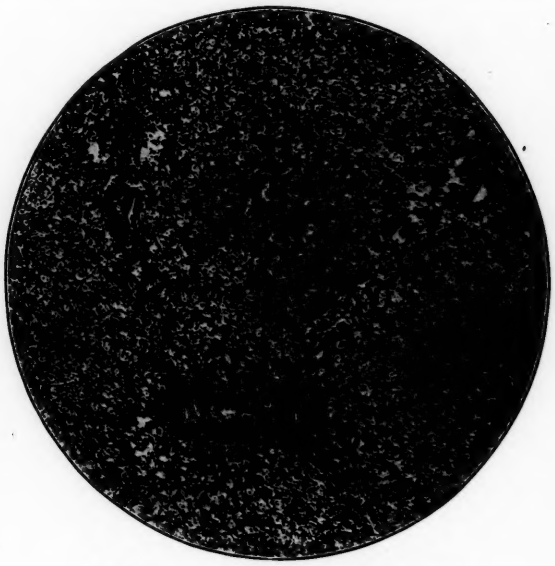

Fig. 3.—Liver of another eclamptic patient.

Fig. 2.—Kidney of eclamptic patient whose liver is shown in Figure 1.

Fig. 4.—Kidney of eclamptic patient whose liver is shown in Figure 3.

quite extensively employed by one of us, its use has now been superseded at the Sloane Maternity by veratrum viride, nitroglycerin and chloral, and with better results.

Our method of using these drugs in toxemia threatening eclampsia is as follows: Chloral (30 grains) is administered per rectum as an initial dose and then repeated in doses of from 20 to 30 grains from every four hours to every six hours, according to the restlessness of the patient.. Nitroglycerin gr. 1/50 to gr. 1/100 from every two hours to every four hours is given hypodermatically. If under the use of the larger doses of these drugs the tension still remains high we depend on the use of veratrum viride rather than venesection.

The preparation used has been Squibb's fluidextract of veratrum and the dose employed has scarcely ever exceeded 5 minims. Our rule is to give 5 minims hypodermatically and watch the effect. As the frequency is usually reduced with the tension, it is our custom to be largely guided in repetition of the dose and in the size of the dose, by the frequency of the pulse, although the reduction in the tension is the object desired.

If at the expiration of from one to two hours the pulse has not been reduced in frequency to 100 or below and the tension correspondingly reduced, a second hypodermatic injection of veratrum 1 to 3 minims is given. The tension of the pulse is then controlled, if not kept low by the continued use of the nitroglycerin, by repeated doses of veratrum 1 to 3 minims every four hours.

4. To repeat the fourth principle stated earlier in the paper, if the toxemia of the patient, as shown by the urine, blood-pressure and general condition, does not

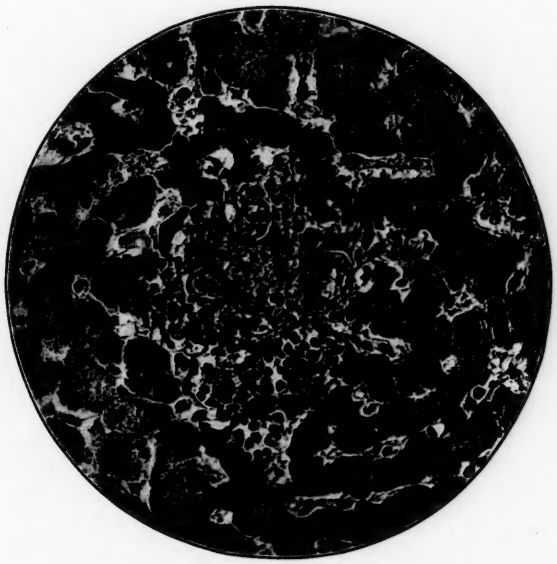

Fig. 5.—Liver of eclampsia, with hemorrhage.

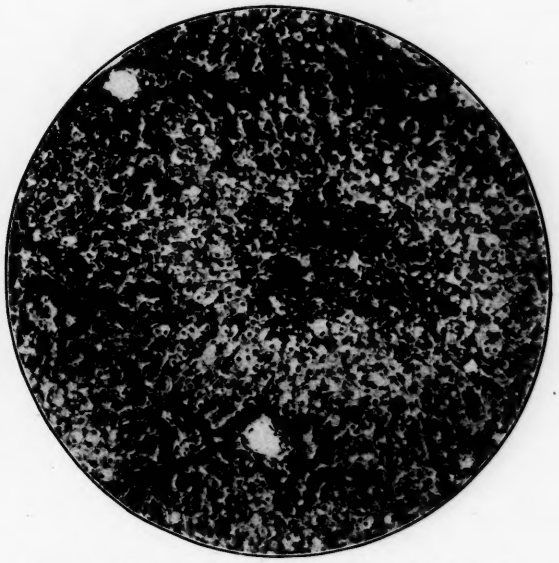

Fig. 7.—Liver of dog. One hour chloroform anesthesia.

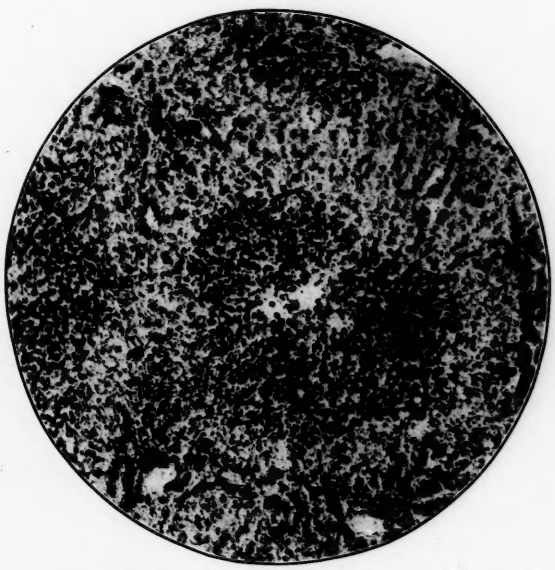

Fig. 6.—Liver. Delayed chloroform poisoning in man.

Fig. 8.—Liver of dog. Delayed poisoning after eight and one-half hours' chloroform anesthesia.

markedly improve under the preceding principles of treatment, or if an eclamptic seizure occurs, the uterus should be emptied. At the Sloane Maternity Hospital some years ago a series of patients was treated on the palliative plan, favoring elimination without emptying the uterus, but the mortality was so much greater than when the fetus and its toxins were eliminated from the uterus and the system, that for the past ten years the

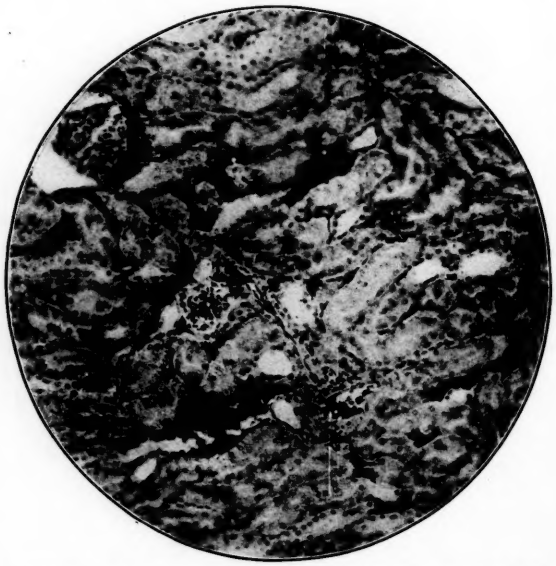

Fig. 9.—Kidney of dog. Delayed poisoning, after seven and one-half hours chloroform anesthesia.

Fig. 10.—Liver of dog. Four and one-half hours ether anesthesia.

rule has been, given an eclamptic seizure, or a toxemia so severe as to strongly threaten eclampsia in spite of treatment, to proceed to empty the uterus.

In carrying out this rule the fifth principle of treatment deserves marked emphasis and will be restated here. *In all methods of treatment, that should be avoided which will either reduce the resistance of the patient or seriously damage any of her organs.*

This principle has an important bearing on the method of emptying the uterus. Having decided that the fetus should be removed from the uterus, the next questions are, How? and When? If the cervix is soft and dilatable and the patient has had one or more convulsions, our own preference is manual dilatation and delivery usually by version.

If on the other hand the cervix is long and rigid we believe that the patient is better off, even if delivered several hours later, to have her cervix softened and dilated by the preliminary use of the elastic bag, or bags, rather than to be delivered by an immediate *accouchement forcé*, which leaves her in marked shock and with cervix deeply lacerated, perhaps to the vaginal junction. Our observation leads us to believe that pronounced shock and deep lacerations lessen both the resistance of the patient and her chances of recovery. In the cases of long rigid cervix, which do not readily dilate under the use of the elastic bag, the so-called vaginal Cesarean section has a distinct and valuable

Fig. 11.—Kidney of dog. Five hours ether anesthesia.

field of usefulness. In a restricted class of these cases future experience may prove the abdominal Cesarean section to be the operation of choice.

SELECTION OF AN ANESTHETIC

In the treatment of eclampsia one of the most important questions is, What anesthetic shall be used and how shall it be employed? For many years at the Sloane Maternity Hospital, New York, it was our custom to administer chloroform to every patient suffering from eclampsia and to administer it to the patient each time she had a convulsion. This meant that often a physician or a nurse was detailed to sit beside a patient during a whole day, or a whole night, with a chloroform bottle and mask in hand and with instructions to administer chloroform at the first indication of a convulsion. This was done with the idea that the convulsions were in themselves an element of grave danger to the patient and should be controlled if possible. As we look back on the treatment now we appreciate that many patients were kept more or less under the influence of chloroform for many hours at a time.

Further, if the uterus had to be emptied for the toxemia of pregnancy, shown in the early months by pernicious vomiting, or in the later months by eclampsia, chloroform was the anesthetic usually employed.

In the light of our present knowledge concerning the effect of chloroform, the question arises: Does its use in puerperal toxemia and eclampsia conform to our fifth principle of treatment recommended above, viz.: "Harmful remedies should be avoided"? We believe that the question should be answered in the negative; and we propose to show that chloroform is dangerous in puerperal toxemia and eclampsia; that ether is safer and is to be recommended when anesthesia is required in this condition. Recent studies of the pathologic changes produced by eclampsia, delayed chloroform poisoning and chloroform anesthesia have shown a striking similarity in the findings in all three conditions.

The pathologic picture in each is that of congestion, hemorrhage, degeneration and necrosis. Our knowledge of the pathology of eclampsia is of comparatively recent date, but thanks to the work of Jurgens, Schmorl, Williams, Ewing, Welch and others the lesions are now well recognized and generally accepted.

The changes are mainly those of congestion, hemorrhage, parenchymatous degeneration and necrosis. The liver and kidneys are the organs chiefly involved. The lesions vary with the clinical type. Thus, in those cases characterized by vomiting, jaundice, a tendency to hemorrhage, with little edema and slight albuminuria, the liver is the organ most involved, as seen in Figures 1 and 2, which represent respectively the liver and kidney of the same patient. Here the liver is markedly involved and the kidney but little involved.

On the other hand in the cases characterized by headache, high tension pulse, marked disturbance of the nervous system, marked albuminuria and edema, the kidney changes are more marked as is seen in Figures 3 and 4, which represent the liver and kidney respectively of another patient. Here the liver changes are slight and the kidney changes very pronounced.

Although many border-line cases present themselves, still the two distinct types are easily recognized in every large maternity service. The lesions in the liver vary from granular and fatty degeneration, with congestion, to necrosis with almost complete dissolution of the liver parenchyma. This necrosis begins at the center of the lobule and extends towards the periphery, leaving only a mass of granular detritus surrounding the central vein, the nuclei and cell contents disappearing with only a reticular network in the place of the liver cells. Thromboses with hemorrhage occur throughout the lobule more often at the periphery (Figure 5). The organ may be swollen or diminished in size, according to the change in the parenchyma. It usually shows a yellowish color and may have hemorrhages under the capsule.

The kidneys are swollen, the cortex thickened, pale and congested, the markings less distinct, and the capsule not adherent. Microscopically the cells of the cortical tubules are swollen, in many places disintegrating. The vessels are injected and the tubules contain much granular material. Other changes described are moderate fatty degeneration of the heart; edema, congestion, and hemorrhages in the brain. The body often shows edema, subcutaneous hemorrhages and jaundice. The above are the pathologic changes found in the severe grades of toxemia of pregnancy and eclampsia.

Now what are the pathologic changes produced by chloroform, which until recently has been largely used in the toxemic condition?

Delayed chloroform poisoning as such has been frequently recognized and carefully studied both clinically and pathologically for the last twenty years. Many writers have reported series of fatal cases, all showing symptoms and lesions which are now recognized as typical of the condition. A number of these deaths occurred after only twenty or thirty minutes of anesthesia, untoward symptoms developing a few hours to a few days after the administration. The symptoms include progressive weakness, pallor or cyanosis, restlessness, vomiting, delirium, convulsions, stupor, coma and death. The organs principally affected are the liver and kidneys. The former is yellow and fatty, with hemorrhages often under the capsule and throughout its substance. The typical picture is that of a central necrosis (Figure 6). The cells about the central vein disappear, leaving only a mass of granular material which shows neither nuclei nor cell outline. Nearer the periphery of the lobule is a zone of swollen cells, which have undergone hyaline and fatty degeneration. A few normal liver cells may remain at the periphery. The kidneys are swollen, markedly congested, with occasional hemorrhages under the capsule, about the tubules, and in the pelvis. The cortex is thickened, the markings indistinct. Microscopically the cells of the tubules are greatly swollen, granular, and loaded with fat. The lumen is filled with granular material, fat globules and coagulated serum. The heart muscle often shows some fatty degeneration. The changes are generally considered to be more profound in the liver, though some observers have found the kidney degeneration even more marked.

The reports of these cases of delayed chloroform poisoning with their pathologic findings led naturally to a study of the lesions produced by chloroform anesthesia. Many animals were used in these experiments, most often dogs, rabbits and guinea-pigs. These studies were exhaustive and include the work of Lengemann, Ostertag, Stiles and McDonald, Stassman and others, together with the more recent work of Howland and Whipple. The most striking result of these studies was the extent of the degeneration and necrosis found in the liver and kidney after chloroform anesthesia of a short duration.

It has been found that characteristic lesions are regularly produced, varying in degree with the duration and depth of anesthesia and also with idiosyncrasy. Thus after thirty minutes to one hour anesthesia with chloroform, the centers of the lobules of the liver show congestion with granular and fatty degeneration, the innermost cells being necrotic, their nuclei not taking the stain and the protoplasm being deeply stained pink with eosin (Figure 7). With more prolonged action the changes approach those found in delayed chloroform poisoning in man. The liver appears yellow and fatty with scattered hemorrhages. The cells about the centers of the lobules are entirely necrotic, a granular mass remaining. Outside of this is an area of cells which have undergone hyaline and fatty degeneration, with normal cells at the periphery. In some cases the liver cells have almost entirely disappeared with only a few scattered living cells in the portal spaces (Figure 8). In the kidney, chloroform anesthesia causes a marked congestion with a cloudy swelling and occasionally hemorrhages into the parenchyma. The cells of the tubules are swollen and granular, occluding most of the lumen; in other places they have disappeared entirely. Fatty degeneration is present and in many cases pronounced (Figure 9). The heart muscle may be pale and show

fat droplets in its fibers. Hemorrhages occur throughout the body, particularly in the serous membranes, and in the intestinal and stomach mucosa.

Howland and others were able, almost at will, by continuing the anesthesia to produce delayed chloroform poisoning in dogs, with symptoms and lesions corresponding in detail with those of delayed chloroform poisoning in man. Thus we find in these three conditions, eclampsia, delayed chloroform poisoning in man and chloroform anesthesia in animals, many similarities. Pathologically there is central necrosis, parenchymatous and fatty degeneration in the liver; congestion, parenchymatous and fatty degeneration in the tubules of the kidney and a tendency to hemorrhages throughout the body. Clinically in delayed chloroform poisoning and in eclampsia there are vomiting, jaundice, delirium, convulsions and coma. With these facts before us, showing that chloroform acts as a poison to the liver and kidney, it certainly seems that its use in toxemia of pregnancy and eclampsia would still further impair these organs already damaged.

In turning to ether as a substitute, the question naturally arises, Does ether produce lesions in the liver and kidney similar to chloroform? Some work has already been done along this line, notably by Bandler, Lengeman and Leppmann, and it was partly to confirm scattered observatons on this subject that a further study of ether anesthesia was undertaken.

In our experiments six mongrel dogs of medium size were given ether by inhalation from an open cone. They were killed with ether forty-eight hours after the last anesthesia and autopsied at once.

Tissues were fixed with Müller's fluid and 10 per cent. liquor formaldehydi equal parts, and stained with hematoxylin and eosin. Fat was stained with Altman's fluid, Scharlach R. as control. Sufficient ether was given to produce complete muscular relaxation with loss of corneal reflex.

Dog 1. Given ether for 3 successive hours.
Dogs 2 and 3. Given ether 2 hours each on 2 successive days.
Dog 4. Given ether for 2½ hours on 2 successive days.
Dog 5. Given ether for 3 hours on 2 successive days.
Dog 6. Given ether for 2½ hours on 3 successive days.

With Dogs 3, 4 and 6 a section of liver and kidney was taken at the beginning of the first anesthesia for control. The dogs all took the anesthesia well and appeared bright and active throughout the experiments with the exception of Dog 3. This dog required artificial respiration twice, had a slight cough on the first day, which became more marked on the following days. It showed no pneumonia on autopsy.

In none of these animals could any necrosis in any of the parenchyma be found. In the lungs occasional small areas of a deeper red than the surrounding substance, containing an increase in amount of blood on section, showed congestion. The heart muscle in each dog was found to be of normal color, striations distinct, no apparent increase in fat.

There were no hemorrhages in the mucosa of the stomach and intestines.

The livers were of a good color throughout, the vessels in a few places standing out a brighter red than the surrounding structure. The yellow appearance was entirely lacking, the cells throughout preserved their outlines with contents intact (Fig. 10). There was no suggestion of necrosis at any point. The protoplasm was somewhat granular and small droplets of fat were found in the cells about the central veins and in the portal spaces. This fat was only slightly in excess of that in the controls.

The kidneys were of normal size, capsule not adherent, cortex not thickened, markings distinct. Microscopically the cells of the tubules were well preserved throughout; their outlines were distinct, the nuclei staining sharply, the protoplasm granular, the tubules containing in some places some granular material. Fat globules were present in a few of the straight tubules and in the lining cells. This condition seemed no more than is normally found and no more marked than in the controls taken. The condition is well shown in Figure 11.

No pathologic changes could be found in any of the sections of pancreas and spleen. These facts seem to demonstrate that in animals, at least, ether produces practically little effect on the liver and kidney as compared with the very marked changes in these organs produced by chloroform, and, while it may be argued that this comparison has been demonstrated only in animals, the similarity between the lesions of delayed chloroform poisoning in man and chloroform anesthesia in animals makes it appear more than probable that reasoning as to the effect of ether on the liver and kidney of man, from the lesions produced by ether in animals, is entirely justified.

Impressed with the above facts, one of us in his service at the Sloane Maternity Hospital has abandoned entirely the use of chloroform during the past year, in all cases of toxemia of pregnancy or eclampsia, either for operative procedure or for the control of convulsions, and has employed ether in these conditions whenever an anesthetic was required.

During this period, aside from numerous cases of toxemia, there have been 20 cases of true eclampsia, *i. e.*, toxemia with convulsions varying in number from one to thirty-one. In the treatment of these patients no attempt has been made to control the convulsions by means of the anesthetic. This end has been sought through lowering the blood-pressure and quieting the nervous system by the use of veratrum, chloral and nitroglycerin. Ether has been used whenever an anesthetic has been required during the delivery. Former experiences with attempts to control the convulsions by chloroform proved that it was practically impossible. Recent experiences without attempts to control the convulsions by an anesthetic have given results which compare favorably with those of former methods. Of these twenty patients only one died, and she was practically moribund when brought to the hospital, with jaundice, vomiting, scanty and bloody urine and with the liver necrotic. This gives a mortality of 5 per cent. In the last twenty cases of eclampsia in which chloroform was used there were five deaths, a mortality of 25 per cent.

In a series of 20,000 deliveries previous to this last year there were 251 cases of eclampsia, with a mortality of 71, i. e., 28 per cent.

It may be asked whether or not the twenty patients in the recent series were as seriously ill as those of the previous series. Not only did it seem to us that they were as seriously ill at the beginning of treatment, one of the nineteen who recovered having thirty-one convulsions, but it also seemed that others having toxemia were perhaps spared eclamptic seizures by the avoidance of the use of chloroform in this condition. It is freely admitted that a series of only twenty cases of eclampsia is a small number from which to draw positive conclusions, but the marked effect of chloroform on the organs

usually involved in eclampsia and the slight effect of ether on these organs makes the use of chloroform in this condition seem irrational and the use of ether rational.

For the loan of the specimens from which the photographs of Figures 7, 8 and 9 were taken we are indebted to Dr. John Howland of New York.

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THE ETIOLOGY OF ECLAMPSIA *

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ECLAMPSIA A DISTINCT DISEASE

The most recent conception of eclampsia is that it is the culmination of toxemia of varied origin. Its crises are manifested by convulsions; explosions of pain, cerebral or substernal; gastric and intestinal irritation; blood or blood-vessel dyscrasia, producing pernicious anemia and hemorrhages, retinal, of mucous membranes, retroplacental, cerebral or general; or as an acute degenerative process of the liver or other organs. We wish to develop this idea to prove that eclampsia is a distinct disease, with a definite pathologic picture, that at times convulsions prove the constant feature, but not invariably so.

We may have eclampsia with a typical picture without convulsions. In such cases the eclamptic seizure is manifested (1) by a headache of agonizing, blinding type, in which the patient may become unconscious from the pain; or (2) perhaps as a burning substernal pain, which is, in our experience, an almost constant feature of the preeclamptic stage, and may also accompany the convulsive type; (3) as a form of blood disintegration in which the poison may produce an anemia, as marked as pernicious anemia, and giving the same blood picture and physical signs, perhaps somewhat more rapid in its course; (4) as an irritant poison to the blood-vessels, as well as to the blood, a condition in which the blood contains various unformed principles or such an excess of normal principles as to produce irritation and even disease and disintegration of blood-vessel walls, which conditions result in sharp hemorrhage from any of the mucous membranes, from the placental site either before or especially after delivery, and into the retina or brain substances; and (5) as a type of acute degeneration of liver substance, simulating acute yellow atrophy; under such conditions other organs may also share in the degenerative process, but not so markedly as the liver.

We then believe that any one of the foregoing conditions may exist as a type of eclamptic seizure, that such patients may have associated with these other types the convulsive effort also, but that a certain percentage of them may become unconscious and die from these causes without at any time having convulsions, and would then have died of eclampsia.

THE TOXEMIA OF PREGNANCY

Any inquiry into the etiology of eclampsia includes a study of the toxemia of pregnancy, particularly that developing after the twelfth to sixteenth week of gestation. As a constant factor in all forms of eclampsia is found some form of toxemia of longer or shorter duration. This must be thoroughly understood in order to grasp the cause of the disease.

We have been called to see a private patient whom we had not known to be either pregnant or ill and found her in the last efforts of a severe and overwhelming convulsion from which she died in less than twenty minutes. This patient had been talking cheerfully to her mother within the hour, had walked up stairs to her room and on hearing her fall the family sent for a physician. On inquiry we found that she was about four and a half months pregnant, that she was excessively constipated and had had a severe headache the evening previously. This was a toxemia of severe grade and of short duration, but nevertheless, a toxemia.

Toxemia as an intermediary step between the ultimate cause and the critical manifestation, is the result of some acute or chronic disturbance of a vital organ, either excretory or secretory. Such disturbance may be purely functional or may be constant, the latter as the result of permanent pathologic changes. Toxemia may be classified from the organ showing the greatest amount of disturbance as gastro-intestinal, hepatic, nephritic, thyroid or parathyroid, placental and fetal.

Whether this disturbance is due to the fact that some perverted metabolism in that particular organ is a primary cause for the toxemia remains to be proven. The study of the pathology and the chemistry of the pathology of these organs and their secretions or excretions, however, must give us further light on the ultimate cause. In succession studies were made of the sulphates, creatinin, the chlorids, lactic acid, acetone bodies, indican, urea and of the nitrogenous principles, in order to discover a chemical cause or defect in metabolism evidenced by some chemical changes in excretions, our inability to study thoroughly all of the excretions being the handicap in this direction. With the exception of urea and the protein principles, these studies and theories have thrown little, if any, light on the etiology.

The work of Zweifel,[1] Ewing and Wolf,[2] Williams and others has, however, in the past few years fixed firmly some facts in regard to the nitrogenous excretion in the urine of utmost value in the study of eclampsia.

By tracing the nitrogen in the urine back to its source it was found that the normal excretion in health according to Folin, is as follows:

Total N in 24 hours		15.8 gm.
Urea	N	87.7 per cent.
Ammonia	N	3.3 per cent.
Creatinin	N	2.7 per cent.
Uric Acid	N	0.7 per cent.
Purin Bodies	N	0.7 per cent.
Undetermined	N	5.6 per cent.

It was found that in eclamptic patients the urea nitrogen is persistently lowered sometimes even to below 50 per cent. of the total, while usually the ammonia nitrogen is above normal, although it may be below. But as a constant factor the undetermined nitrogen is high, taking up much of the lowered urea content.

From these variations we deduce the fact that somewhere in the organism there is a deficient changing of ammonia and amino-acids into urea. This has been called "deficient desamidation" by Ewing, who asserts

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Sixty-First Annual Session, held at St. Louis, June, 1910.

1. Zweifel: Arch. f. Gynäk., 1904, lxxii, 1905, lxxvi; Zentralbl. f. Gynäk., 1909, No. 26.
2. Ewing and Wolf: Jour. Med. Sc., May, 1906; Am. Jour. Obst., March, 1907.

that the process is more than an oxidation. This work is in a great measure performed by the liver, and therefore we are not surprised to find the liver most severely involved. We should be misled however, if we considered any condition of the liver as a primary cause, for the process of "desamidation" is complex, so complex that no one organ can be responsible.

Though we are forced to admit that these studies give no definite light as to the etiology of eclampsia, yet they have proved of value in treatment and in prognosis. We have found that in those cases in which the nitrogen ratio was disturbed the greater liver involvement occurred, producing the most severe eclampsia and usually at some time, unless corrected, ending in convulsions.

Studies have also been pursued along the line of thyroid secretion. We know that normally during pregnancy the thyroid is enlarged, and its function evidently increased, and from a purely theoretical standpoint we were led to suppose that in this internal secretion was found something to help the blood and body organism combat syncytial invasion. In a certain type of cases manifested by a high grade of toxemia we find hemorrhages from the mucous membrane of the bowel, stomach and mouth and an anemia showing marked blood disintegration and leading finally to eclampsia and perhaps death of the fetus. We have found that the careful administration of thyroid extract in small doses throughout the pregnancy has in future pregnancies after several disasters produced healthy children and that the mothers are even able to nurse the babies. In this type of cases also, the nitrogen partition is markedly altered, the alteration pursuing the same general type of eclamptic urine.

In past years the kidneys were blamed for much of this trouble. We now know that the cases are few in which the breakdown of the kidney in any way acts as a primary factor. The kidneys are secondarily involved in nearly all of the cases, but they may not be so even in the course of the most severe eclampsia. When the kidneys are the primary cause, we usually find widespread arterial changes and albumin and casts in the urine. There may or may not be a change in the nitrogen ratio. And we believe that such a change of undetermined nitrogen is, under these circumstances evidence of the present status of liver involvement over and above the kidney disease. The crisis of this type may assume the form of general severe hemorrhages.

There then remains the placenta and fetus to which we can ascribe a primary cause. Eclampsia occurs only in pregnancy and is a disease developing invariably after the time of placental formation. So we find in the past few years that the papers written on placental or syncytial cause of eclampsia are legion. From an exhaustive study of these theories we believe that no one has been proved, the most plausible being that based on the work of Bergell and Liepmann[3] (1905) and Savare[4] (1907) on the ferments, and the papers of Dryfuss,[5] Mathes,[6] etc., on autolysis. The normal placenta is rich in ferments.

1. Those acting on carbohydrates.
2. Glycolytic ferments (a question).
3. Proteolytic ferments.
4. Blood-coagulating ferments (Savare).

Any perversion of these useful ferments produces widespread disaster, namely, multiple hemorrhage and changes in the entire placental functions causing, by the retention in the mother's body of unchanged principles, an excess in her blood of principles normally changed into innocuous food for the fetus, and even autolysis of the placenta itself. When we ask, however, what causes the perversion of these normal ferments, we find no answer.

Let us quote from Holland's[7] summary of these theories:

From the foregoing account, it is obvious that, during the past six years, a number of valuable facts as to the etiology of eclampsia have been discovered. It is equally obvious that a number of worthless theories have been propounded, many of which have been disproved, but which, nevertheless, have served the good purpose of paving the way for better work. As far as it is possible to draw conclusions, the following are suggested:

1. There is no special eclamptic toxin.

2. Chemical discoveries have shown that eclampsia is an auto-intoxication, in which a profound disturbance of protein metabolism plays a chief part, the nature of which now rests on a firm basis.

3. The chief toxic substances are the products of the disintegration of protein.

4. In eclampsia, intracellular ferments, especially proteolytic, are raised in activity throughout the body, causing autolysis of cells and production of the above toxic substances.

5. The primary cause of eclampsia is to be sought in the placenta.

6. As regards the connection of the placenta with eclampsia:

I. The "specific placental theory" of Veit[8] must be considered dead; the various specific placental reactions (syncytiolysis, precipitins, etc.), whether produced naturally or experimentally in animals, do not exist.

II. Placental extracts possess no special toxicity for animals, beyond causing coagulation of the blood and death from extensive thrombosis.

III. The eclamptic placenta has no special toxicity.

IV. The intracellular ferments of the placenta are increased in activity in eclampsia. In the light of present knowledge, the most probable theory of the cause of eclampsia is an intoxication of the body by the passage of ferments and autolytic products from the placenta into the circulation, the principal effect of which is increased coagulability of the blood and the activation of autolytic ferments in other parts of the body.

THE PATHOLOGY OF ECLAMPSIA

In the study of the effects of eclamptic toxins on the different organs, we find that so definite are the changes that a diagnosis can now be made post mortem without the clinical history. There are usually edema and hemorrhages in the brain. The kidneys show, in over 95 per cent. of cases, active degeneration of the parenchyma, principally the epithelium of the convoluted tubules. Even in severe cases, however, the changes may be slight. The heart shows cloudy swelling and fatty degeneration, perhaps hemorrhages and necrosis. There may be general thrombosis and hemorrhages into other organs.

We are principally concerned with the picture in the liver. The best work in this has been reported by Konstantinowitsch,[9] who asserts that the diagnosis may be made from the liver alone. This is a progressive change which first manifests itself by a degeneration of liver

3. Bergell and Liepmann: München. med. Wchnschr., 1905, No. 46.
4. Savare: Zur Kenntnis der Fermente der Placenta, Beitr. z. chem. Physiol. u. Path. (Hofmeister), ix, 141.
5. Dryfuss: Chemische Untersuchungen über die Aetiologie der Eklampsie, Biochem. Ztschr., 1908, vii.
6. Mathes: Ueber Autolyse der Placenta, Zentralbl. f. Gynäk., 1901, No. 51.
7. Jour. Obst. and Gynec. Brit. Emp., December, 1909, p. 398.
8. Veit and Scholten: Syncytiolyse und Hämolyse, Ztschr. f. Geburtsh. u. Gynäk., xlix; Zur placentaren Theorie der Eklampsie Aetiologie, Arch. f. Gynäk., lxxxvii; Ueber die Aetiologie der Eklampsie, Ztschr. f. Gynäk., l.
9. Konstantinowitsch: Beiträge zur Kenntnis d. Leberveränderungen bei Eklampsie. Beitr. z. Path. Anat. u. z. Allg. Path. (Ziegler). xl.

cells in the portal spaces at the periphery of the lobule, by fibrin formation and by hemorrhages, then by necrosis and extension of the process to larger areas of liver cells progressively toward the center of lobule from the periphery.

METHODS OF DIAGNOSIS

We should leave this review unfinished should we omit the methods by which we make a diagnosis of toxemia and eclampsia. Normal physiologic pregnancy is not an uncomfortable process. The deviations may begin with a slight lassitude, even hebetude, stupor and coma, or again, with melancholia, or even mania, which are all manifestations of toxemia. Usually there are progressive headache, disturbance of the stomach, disturbance of vision and constipation. The skin is dry and harsh, the lips cracked, the mucous membranes of mouth parched and dry without fever. There may be swelling of the ankles, emaciation, or perhaps a general puffiness of the skin over the entire body or only over the ankles, hands or face; there may be epigastric or substernal pain, perhaps an exaggeration of some latent nervous phenomena, as for example chorea or insomnia.

In preeclamptic toxemia and in eclampsia the blood-pressure is usually higher than normal for that patient, ranging from 170 to 180 or even 200 mm. of mercury. In the severer forms this persists, in spite of treatment, and tends to grow more marked, until convulsions or some other crisis appears. A study of the blood-pressure record should be part of the routine investigation of every pregnant patient early in the pregnancy or better still when not pregnant, a record of the patient's normal pressure should be secured; should the patient become toxic, one of the earliest signs of toxicity is this increased blood-vessel tension.

Since the first point noticed about the urinary findings is that there is usually a markedly decreased total daily output, we would urge increased study of this point in all pregnant patients. At times the only defect may be the lowered total daily output of an apparently normal urine. The specific gravity varies, in the inverse ratio to the quantity excreted. The next point noted is the progressive decrease in the daily output of solids. This may be studied approximately by investigating the total output of urea. We have found, however, that, up to the present time, the most definite indication of any toxemic disturbance, earlier than can be secured by any other method, is found in a study of the partition of the different forms of nitrogen found in the urine. Earlier in the paper we gave the normal ratio. The average daily output varies in pregnancy from 10 to 20 gm. per day of nitrogen excreted. It seems to be not so much the lowered output of total nitrogen within a certain range, as the definite change in the relations of the different forms. A lowering of the urea nitrogen, an increase of undetermined nitrogen, and some change in the ammonia nitrogen shows a beginning toxemia. With the tendency for these changes to persist or grow worse, we find evidence of oncoming eclampsia. Albumin is present in the advanced stages of the disease. It is entirely misleading, however, to base the diagnosis entirely on albumin, since very often it is not present in severe grades of toxemia. The presence of sugar, of acetone bodies, of an excess of indican or of peptone is an indication of faulty metabolism requiring careful watching. The presence of granular epithelial or fatty casts is positive evidence of kidney breakdown.

An early examination of the retina is of importance in all toxemic cases. We recall several patients who came to us, because some defect in vision led to an eye-ground examination and the advice from the ophthalmologist to seek relief for a kidney condition. The findings are those of arterial degeneration of the retinal vessels and hemorrhages into the substance of the retina.

A careful examination of the blood of toxemic patients proves of some value. In preeclamptic toxemia and in eclampsia we find a reduction of the hemoglobin and red cells with a moderate leukocytosis, the latter, on making a differential count, showing little variation from the normal.

SUMMARY

Those ideas which will prove of value from this study are as follows:

1. Eclampsia is a distinct disease with varied manifestations and a definite pathologic picture.
2. There is some relation between the fact that an altered nitrogen ratio is found in the excretions and the fact that the liver is the organ most seriously involved.
3. A study of this progressive nitrogen disturbance may prove a guide as to the point beyond which the liver involvement cannot go and allow regeneration and recovery.
4. While no placental theory has yet been proved, the most plausible theory is that some ferment from the placenta may prove responsible as a primary cause for the condition because of deficient or deranged action.
5. Any preexisting permanent pathologic condition may prove an exciting cause and still perhaps act by disturbing placental function.
6. Eclampsia should be a rare condition in the hands of a skilful, thorough investigator.

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THE SURGICAL TREATMENT OF ECLAMPSIA*

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There seems, at this time, to be hardly any question but that women suffering from eclampsia do better if the uterus is emptied promptly on the appearance of convulsions. Carl Braun emphasized the fact that the convulsions ceased or became less severe after delivery. Dührssen showed that in 93.75 per cent., and Olshausen that in 85 per cent. such a result followed. Seitz, in a very large collection of statistics, proves it conclusively. If further proof were needed, Winter brought it, in 1909, at the congress in Budapest, where he showed that of twenty patients delivered before they had had six convulsions not one died, and in thirty-two cases, only three women were lost, while by a waiting policy, the mortalities were much greater, as follows:

Eclamptics treated expectantly with spontaneous labor, 8; mortality, 40 per cent.

Eclamptics, with expectancy till os was fully dilated, 19; mortality, 30 per cent.

Eclamptics, with mild measures used for hastening labor, (metreurysis, incisions, etc.), 32; mortality, 25 per cent.

Eclamptics with vaginal Cesarean section, 34; mortality, 9 per cent.

Eclamptics with vaginal Cesarean section immediately after first attack, 22; mortality, 0 per cent.

Bossi dilator used, number not given; mortality, 36 per cent.

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* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Sixty-First Annual Session, held at St. Louis, June, 1910.

In the discussion which followed, Bossi reported 395 cases in which his instrument had been employed with a death-rate of only 9.45 per cent. In the Berlin Charité during the years from 1904 to 1909 the mortality of the cases delivered within the first six hours was only 3.8 per cent.

THE OLD AND THE NEW VIEWS

I have always taken a skeptical stand as to the usefulness of statistics and usually discard them unless they cover a long period of time and comprise very large numbers. The individual opinion of those competent to judge is much more valuable. There seems to be a trend of the formerly most conservative obstetricians, toward a more and more early operative delivery. Jaggard taught the expectant or medical treatment and this, therefore, was my own practice for many years, but added experience has convinced me that the women do better if the uterus is emptied at once. The convulsions cease more often, or grow less violent, and at longer intervals, consciousness returns earlier and convalescence is sooner established. While no special record has been kept, it seems to me that the pathologic findings in the urine disappear earlier than with older methods of treatment. One of the strongest arguments for early delivery is the immense improvement of the child's chances for life, various statistics showing that twice, and even three times as many children are saved by early delivery. Much depends on the time in pregnancy of the outbreak of the convulsions and on the method of delivery.

THE PROBLEM TO BE MET

Since it is the best policy to empty the uterus early, a discussion of the treatment of eclampsia before delivery resolves itself into the consideration of the methods to be employed in individual cases. Since removal of the child is opposed mainly by the soft parts, the subject of treatment is narrowed down to a discussion of how best to prepare a way for the child through the cervix and vulva. The method of effecting delivery depends on the period of pregnancy, the environment of the patient, the state of the cervix, the skill of the operator, and the extraneous complications such as contracted pelvis, placenta prævia, heart disease, infection, etc.

Before the seventh month, the fetus always dies, either during or soon after delivery, and it is, therefore, necessary only to obtain sufficient dilatation of the cervix for the performance of craniotomy and extraction. After the period of viability, one must try to save the infant also.

If the patient is in a well-equipped maternity hospital and a man capable of his task is at hand, immediate delivery is practiced, overcoming by operation, the resistance of the cervix and perineum. If the patient is in a private house, and the obstetrician is without skilled assistance, reliance must be placed on medical treatment and on less active surgical measures. Here, puncture of the membranes, the use of the colpeurynter, and, when the cervix is almost completely dilated, manual dilatation of the balance, with episiotomy and forceps delivery or version and extraction depending on the conditions.

THE CONDITION OF THE CERVIX

The state of the cervix is the all-governing condition so far as the choice of method of rapid delivery is concerned. If the cervix is fully dilated, or effaced and the os has a diameter of 8 cm. (about 3 in.) delivery may safely be effected at once by forceps if the head is engaged, by version and extraction if the head is movable above the inlet. In primiparæ, I prefer to force the head down into the pelvis and then apply forceps rather than do a version.

If the cervix is effaced, that is, shortened, or taken up, or obliterated, but the os not sufficiently dilated, one may easily procure sufficient enlargement of the opening by manual dilatation, or stretching the os by means of one of the mechanical dilators about which there was such a furore several years ago. Hydrostatic bags may also be used for this purpose or the thin partition between the uterus and the vagina may be incised. —Dührssen's incisions. Manual dilatation is the method of choice in this particular class of cases, then episiotomy (in primiparæ) to overcome the resistance of the perineum, followed by forceps delivery.

The greatest discussion has arisen as to how to deliver in those cases—and they are the most frequently met—in which the cervix is uneffaced, tightly closed, and not admitting even the tip of the finger. Manual dilatation, metreurysis, Dührssen's incisions, vaginal Cesarean section, abdominal Cesarean section, each has adherents. I have had experience with all these methods and in the following will give my own opinion of each.

MANUAL DILATATION

Manual dilatation of the closed cervix with delivery is an operation, which, in the olden time, was called *accouchement forcé*. It requires from one to three hours and is often painfully tiring to the fingers and hands. It is invariably attended by lacerations of the cervix, and these tears are often deep, sometimes even of the importance of a rupture of the uterus, opening the peritoneal cavity, causing death, from hemorrhage or from sepsis. In multiparæ, the lacerations are usually somewhat less extensive. In all cases, the cervix is bruised and battered, and sepsis, even in the hands of the cleanest obstetrician is sometimes unavoidable.

Philander Harris and a few other authors, take a different view of this operation, but my own experience makes me oppose it, and in this, I am supported by all the German authorities. The latter demand the following prerequisites for the operation:

1. Cervix effaced.
2. Pelvis normal.
3. Child not too large.
4. Normal presentation, position and attitude, or one that can be produced.
5. Dilatable vagina.

In a few cases I found the parts so soft and dilatable that it was possible to stretch the uterus open sufficiently for safe delivery, but these are so rare as to be truly exceptional.

METREURYSIS

By putting a colpeurynter in the lower uterine segment and exerting traction on it, two things are accomplished—uterine action is set up and strengthened and the cervix is mechanically dilated from above downward, the bag acting like a fluid wedge. In cases in which no urgency exists, metreurysis is the ideal method of opening the uterus, because it imitates most closely the natural process. In favorable cases, that is, soft cervix and large vagina (conditions rarely found in primiparæ) it is possible under anesthesia, to dilate the cervix completely in from one to two hours, but if the cervix is rigid, and tightly closed, an attempt to force it open by means of bags in this time would fail, if it did not

rupture the uterus. Unfortunately rigid cervix is a frequent complication of eclampsia, since this condition is commoner in primiparæ and women of advanced years. Contraindications to metreurysis in eclampsia are, scars of the cervix, abnormal rigidity, complete closure of the cervix in a primipara, edema of the paracervical tissues, local infection, great urgency.

One may, in selected cases, procure partial opening of the womb with the bags, and then complete the dilatation by incisions or the vaginal Cesarean section. A word of warning to those using the bags for cervical dilatation. If too much water is put into them, or too much traction put on the tube, the uterus is stimulated to over-violent action and may rupture. This is especially likely to occur in placenta prævia. I use a large Voorhees bag in preference to all others.

INSTRUMENTAL DILATORS

Bossi introduced his branched dilator in 1887, but it received no general recognition until 1898 when Leopold, of Dresden, reported seventeen cases of eclampsia treated with it. It was then very extensively employed and many modifications of the instrument invented. Bossi used it when the cervix was closed, as did many others. Now, most authors have discarded it, and Bossi, himself, at the Budapest congress, said it should be used only when the cervix is effaced. Bossi reported 395 cases of eclampsia treated by rapid dilatation with a mortality of 9.45 per cent.

In a multipara, with a soft cervix, the instrumental dilator may occasionally accomplish the purpose without laceration or with negligible injuries. In other cases more or less deep tears are inevitable and the frequency of serious injury has relegated the instrument to a very subsidiary place. I would deny its usefulness in the class of cases under consideration and agree with Pfannenstiel that, in the clinic, the dilator is superfluous; in private practice, dangerous.

DÜHRSSEN'S INCISIONS

In the class of cases being discussed, the cervical incisions are contraindicated. Only when the cervix is effaced, shortened or fully taken up, when there is but a thin partition between the uterus and the vagina, are such incisions justifiable. Before this time, the large blood-vessels have not yet been retracted upward out of reach of the cut, the peritoneum has not been pulled up, the connective tissue of the broad ligaments is still in the pelvis. If one cuts the thick cervix now, there is danger of severe, perhaps uncontrollable hemorrhage, the incision is easily torn into the peritoneal cavity, and further, the attempt to draw the fetus through the pelvis will disrupt the whole connective tissue framework of the pelvis. Dührssen's incisions are also contraindicated if the child is large or presents abnormally.

VAGINAL CESAREAN SECTION

As was indicated at the beginning of this paper, this operation has given the best results of any yet obtained, especially when it is performed immediately after the first convulsion. It is considered by Dr. H. D. Fry in one of the papers of this symposium.

ABDOMINAL CESAREAN SECTION

This operation, proposed by Halbertsma in 1889, has not obtained the recognition it deserves. The statistics collected showing 30 to 60 per cent. maternal mortality, surely give too dark a picture, for it must be remembered that only the worst cases are submitted to the operation. Newell condemns the section, but Olshausen recommends it. It saves more infants than any other method of delivery, and is to be preferred when these complications coexist: contracted pelvis, placenta prævia, marked edema of the vulva, vagina and parametrium, scars or extreme rigidity of the cervix and perineum, unusual brittleness of the cervix, enormous varicosities of the genitals, large child, abnormal presentation. In the latter cases, the vaginal section often meets with insurmountable difficulties. A less skillful operator may be able to do the classical section when he would hesitate to operate from below.

With the extra-peritoneal Cesarean section, a resurrection of the laparo-elytrotomy of the last century, I have had no experience, but am inclined to believe that the advantages claimed for it are somewhat overdrawn. The technic is more difficult than that of the classical section; hemorrhage from the incision is sometimes dangerous; the Trendelenburg posture is needed and this increases the danger of air embolism and cerebral thrombosis already exaggerated in eclampsia; extraction of the child is harder and is oftener fatal to the infant; in 21 per cent. of the 65 cases reported by Pfannenstiel, Latzko and Fraipont the peritoneal cavity was opened, and in three, the bladder was injured; sometimes the bladder cannot be safely removed from the uterus and the transperitoneal route must be taken; the labor must have progressed till the uterus has drawn the peritoneum upward and unfolded the anterior plica—this is impossible in eclampsia, which demands instant delivery; the danger of infection of the immense connective tissue spaces is probably as great as that of the peritoneum, at least suppuration has been frequently reported (Rubeska, Franz), and hernia is just as possible, Franz having already found one with the bladder and another with the cervix in it; the danger of rupture of the uterus in subsequent labor is greater than with the classic operation because the scar is in the thinned dilated portion, and further, a second Cesarean section would be very difficult through the scarred cavity of Retzius; Latzko collected 137 cases which showed a maternal mortality of 7.3 per cent., while this is considered a high figure for the classical section.

Subjects of kidney and liver disease are generally considered poor subjects for laparotomy, and the danger comes mainly from the anesthetic. By means of nitrous oxid and oxygen anesthesia, this element may be reduced to an almost negligible minimum. Given a primipara, at or near term, with a long closed cervix and living child, the patient being in a good maternity hospital, I would strongly incline to abdominal Cesarean section.

RIGIDITY OF VAGINA AND PELVIC FLOOR

In the discussion of operative delivery, the resistance opposed by the cervix only has been mentioned, but the vagina and pelvic floor must by all means be considered. Rigidity of these structures is one of the strongest arguments against vaginal Cesarean section, because even if we do the deep perineotomy advised by Dührssen, it is not always possible to avoid extensive lacerations of the vagina, the pelvic floor, the perineum, the anus and the bases of the broad ligaments.

In performing episiotomy, one should not be afraid of cutting deeply into the levator ani muscle, because this can be accurately sutured, whereas, if brute force in delivery is used, the muscle may be torn from the bony attachments—an irremediable injury. Where only

slightly more room is needed, this may be obtained by stretching the muscle with the fingers or fist, but I have seen deep lacerations of the parts produced thus as well as by the head. I recommend the medio-lateral episiotomy and am not sparing with the incision.

A strong distinction must be made between hospital cases with an obstetric surgeon in charge and private practice by a general practitioner. For the latter, slower methods of treatment are to be recommended, first rupture of the membranes, then hastening the delivery as much as is safe, by metreurysis, manual dilatation, and, when the cervix is thoroughly effaced, incisions if necessary.

SURGICAL MEASURES

Venesection is a surgical procedure, but will probably be spoken of under the heading "medical measures," as also will saline solution administered hypodermically. Care should be taken with the dosage of saline solution, as edema of the lungs may be superinduced. Newell in one case transfused human blood.

Of the surgical measures special mention is to be made of decapsulation of the kidneys, first proposed by Edebohls. Chirié, in June, 1909, collected thirty-three cases of renal decapsulation, and finds that in only one-half of the patients do the convulsions cease after the operation, but many authors note that they are less severe. Unanimous accord exists regarding the postoperative diuresis—the amount of urine almost always increases, and there is decrease of the albumin casts, etc., and augmentation of the urea and solids. The edema subsides rapidly and consciousness returns quicker. The wounds heal well if due attention is paid to asepsis, but several instances are noted of suppuration due to dislocation of the dressings during convulsions and restlessness—one fatal case of infection and one fatal case of iodoform poisoning from gauze used in packing. In the one case in which I was consulted, the convulsions ceased, diuresis improved, but the woman died in coma three days after operation. It is impossible at the present time to pass judgment on this procedure, and also on the advisability of nephrotomy in addition to decapsulation. Sippel and a few German authors perform and recommend it. It is occasionally done in England and America. It has not had a fair trial since only cases that prove refractory to all other methods are submitted. Considering what we know of the causation of eclampsia, the operation is not rational, but it is perhaps as reasonable as any one of our other "specific" remedies. Chirié, in his thirty-three cases, found sixteen deaths, which is not encouraging. The literature will be found in Chirié's article, *Obstétrique*, June, 1909, and in the *Edinburgh Medical Journal*, May, 1909. Johnsen, in the *Deutsche medizinische Wochenschrift*, January, 1910, says that forty-two cases are on record with eighteen deaths. The general mortality of eclampsia is not as high as this.

ANESTHETICS

Early in my practice I learned two facts: one, that morphin given to eclamptics killed many of the babies and prolonged the postpartum coma, and the other, that chloroform is a very dangerous drug in eclampsia. It causes acute yellow atrophy of the liver and cardiac paralysis, acute and chronic. Whereas, I formerly advised anesthesia for every vaginal examination or manipulation to prevent a convulsion resulting from the local irritation, I now restrict anesthetics and narcotics to an irreducible minimum. For the operative delivery, I have used ether, but for Cesarean section I employ nitrous oxid and oxygen, because the child is delivered so rapidly that the preliminary asphyxia is of no moment. Cragin and Ewing also have emphasized the dangers of chloroform.

34 Washington Street.

VAGINAL CESAREAN SECTION *

HENRY D. FRY, M.D., Sc.D.
WASHINGTON, D. C.

The history of vaginal Cesarean section is recorded in the last decade of obstetric literature. To Dührssen belongs the credit of having introduced the operation to the notice of the profession, while he and his German confrères have done much to elucidate the indications and technic of the operation. The result secured by them in the treatment of eclampsia by vaginal Cesarean section has reduced the maternal death-rate to a lower figure than that obtained by any other line of treatment. Fully nine-tenths of the literature on the subject is published in the German language. The United States comes second. A few articles are found in the French, Spanish and Italian languages.

In 1903 J. M. M. Kerr[1] published a report of a case of vaginal Cesarean section. Impressed with the value of the operation in the treatment of eclampsia, N. T. Brewis determined to employ the method in the next suitable case, and three years later reported to the same society six operations.

NOT IN GENERAL FAVOR

Stamm, of Fremont, Ohio, was the first to bring it to the attention of the profession in this country. Since then papers have been published by sixteen authors in the United States, who, with one or two exceptions, have endorsed the operation and recognized its value. In the discussions that have occurred on these various papers in our medical societies the general tone of debate has been against the operation. As a rule one will notice that the objections are based on theoretical grounds and the objectors have had little or no experience with the operation. In spite of opposition, however, favorable reports continue to appear and new advocates of the operation recognize and advise its performance. Palmer Findley prophesies that it will remain in general favor with only a few obstetricians and that, in the light of reported cases, the scope of the operation will be limited and vaginal Cesarean section will be little practiced.

He compares vaginal Cesarean section unfavorably with abdominal Cesarean section in eclampsia, on the ground that the latter is time-saving and the dangers less to the infant. The saving of time is questionable. It may take two or three minutes more to deliver the infant by vaginal Cesarean section, but the completion of the operation can usually be accomplished as soon as or more quickly than abdominal Cesarean section. When the mother is suffering from eclampsia the infant is already toxemic and generally is born dead, or dies soon after delivery. The difference of a few minutes in favor of delivery by abdominal Cesarean section will change the result for the infant too little to counterbalance the increased maternal mortality of the latter operation. The shock of abdominal Cesarean section

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. Kerr, J. M. M.: Tr. Edinb. Obst. Soc., 1903.

added to the dangers of the operation on toxemic patients will give a higher maternal death-rate than when performed for other indications. Consequently we should not consider the favorable maternal death-rate of abdominal Cesarean section performed for different conditions as applicable to the situation presented when the mother is suffering from eclampsia. Edgar and Hirst quote the statistics of Charpentier for abdominal Cesarean section performed for eclampsia with a maternal mortality of 36.26 per cent. Hillman collected data on 40 operations with a mortality of 50 per cent. for the mothers and 45 per cent. for the infants. Olshausen has a mortality of 33.3 per cent.

INDICATIONS FOR THE OPERATION

The indications for vaginal Cesarean section presupposes a rigid os and undilatable cervix, and it is a valuable operation under the circumstances when the conditions point to the rapid evacuation of the pregnant uterus in the later half of gestation. Exceptionally it may be called for before that period, but it then is performed in the interest of the mother alone. The prompt termination of pregnancy may be required in the interest of the mother, or of the infant, or of both. The life of the unborn infant is so dependent on the welfare of the mother that disease compromising her life is liable to destroy the former. When toxemia has reached a degree that endangers the mother's life the same intoxication threatens to destroy the infant; when the loss of blood from accidental hemorrhage, or when advanced organic disease of the heart, with failure of compensation, threatens the life of the mother primarily it jeopardizes that of the offspring secondarily. Labor complicated by an undilatable condition of the os and cervix, physiologic or pathologic, endangers the infant primarily and the mother secondarily. Labor complicated by prolapse of the funis through a cervical canal unprepared for prompt dilatation compromises the safety of the infant and not that of the mother.

The indications under consideration for the employment of vaginal Cesarean section are restricted to its use in the treatment of eclampsia. These indications are viewed from the standpoint of the obstetrician and of the obstetric surgeon. Two years ago I read a paper in Chicago, before this Section of the American Medical Association, in which I presented my reasons for advocating prompt delivery in the treatment of eclampsia. This phase of the subject is presented to you to-day by other participants in the symposium, so my line of thought will take up for consideration the indications for vaginal Cesarean section from the standpoint of the obstetric surgeon.

To accomplish rapid evacuation of the pregnant uterus in the latter months, or at the expiration of gestation we must recognize two important, cardinal steps in the operation: first, the dilatation of the cervix; second, the delivery of the infant.

The methods of delivery of the infant, whether by forceps or version, belong to the domain of the obstetrician. The consideration of the indications for vaginal Cesarean section from the standpoint of the obstetric surgeon presupposes that we have to deal with an intact and undilatable cervix. The cases are represented usually by primiparæ in the latter months of pregnancy and constitute that difficult class of patients in whom the obstetrician recognizes the complications to be met in the quick artificial dilatation of the cervix. Before considering artificial methods of rapid dilatation let us study briefly the natural method.

NATURAL METHOD OF CERVICAL DILATATION

Nature has one way to accomplish this purpose, and it is not done rapidly, but slowly, gradually, gently and without danger to the integrity of the soft parts. The intermittent force of the uterine contractions drives the bag of water against the point of least resistance, the center of the lower segment of the uterus represented by the internal os. Hydrostatic pressure from above, aided by the antagonistic action of the uterosacral and uterovesical ligaments, exerted antero-posteriorly, constitute the dilating mechanical forces.

Physiologic changes of great importance are the progressive thinning of the lower segment and the softening and dilatability of the tissues produced by engorgement of the pelvic blood-vesssels and the transudation of serum between the muscular fibers of the lower segment of the uterus and cervix. As resistance to the dilating forces is diminished the internal os opens wider; the cervix is effaced; the external os is dilated, and finally the canalization of the cervix is completed. Dilatation begins by obliteration of the canal from above downward. A funnel-shaped depression beginning at the site of the internal os increases in diameter and depth until the cervix has disappeared and the uterine cavity is separated from the vagina only by the external os.

ARTIFICIAL METHODS OF CERVICAL DILATATION

No method of artificial dilatation can be instituted that will meet the conditions mentioned in the natural method. Formerly manual dilatation was the only resource of the obstetrician and the result could not be accomplished by this method gradually, gently and without danger to the integrity of the soft parts. The very first requirement *viz.*, that of quick dilatation in the treatment of eclampsia is contrary to the laws of Nature; but these must be sacrificed. Dilatation by the manual method cannot be accomplished quickly in these cases, as its advocates admit that from forty minutes to an hour or longer is necessary to accomplish the purpose.

The Bossi dilator was introduced because the force obtained by the hand was insufficient. By the aid of this powerful instrumental dilator time is saved and the canal is quickly opened. Not only is the integrity of the soft parts endangered by the forcible manual or instrumental dilatation of unprepared tissue, but the life of the eclamptic patient is further jeopardized. The unfavorable results of *accouchement forcé* in the treatment of eclampsia are largely due to the aggravation of the disease by the reflex influence of forcible stretching of the cervix.

We must admit that every effort to effect quick dilatation and the termination of pregnancy opposes the laws of Nature. But disease is opposition to those laws and we must fight eclampsia by illegitimate means. These means are, first, the termination of pregnancy which is furnishing the source of the toxemia; second, the rapid dilatation of the cervical canal; third, the rapid extraction of the infant. The prompt termination of the first stage of labor is the principal difficulty to be overcome, and we have seen that manual and instrumental dilatation are objectionable.

How then can we quickly dilate an intact, unprepared cervix without subjecting the patient to the injurious influences of forced mechanical stretching? Manual and instrumental dilatation will not accomplish that result. Vaginal Cesarean section fulfils the indications better than any other method. The unprepared

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tissues are cut and the wound opened without danger to the integrity of the soft parts. The cervical canal is dilated without forcible stretching and the eclamptic patient is saved from injurious reflex disturbances. A clean-cut surgical wound is left to be repaired instead of bruised and torn tissues.

THE VALUE OF VAGINAL CESAREAN SECTION

The objections to the operation are based on faulty technic and may be overcome. Sepsis, injury to the bladder, opening the peritoneal cavity anteriorly or posteriorly, extension of the incision by tearing, and hemorrhage cannot be placed to the discredit of the operation, but to that of the operator. The danger of infection is no greater in this operation than in any other performed on the birth canal of the pregnant woman, and no greater than that encountered in forcible manual and instrumental dilatation.

Injury to the bladder can be avoided by careful separation of the organ from the cervix. The connective tissue binding the bladder to the cervix is softened and loosely attached during the latter months of pregnancy except in the median line. The closer attachment in the median line is the uterovesical ligament. By cutting this central attachment and carefully working beneath the tissue and close to the cervix, danger of injury to the viscus is obviated.

Opening the peritoneal cavity in front or behind can result only from the careless extension of the incision beyond the needs of the case. Extension of the incision by tearing is due to one of two causes: either the incision is not carried up through the internal os and the wound opened sufficiently before delivery by forceps or version, or the extraction of a large infant at or about full term with only the anterior incision of the cervix, which alone is sufficient in premature cases.

Very little hemorrhage follows the separation of the bladder and still less from the incisions of the cervical tissue. Post-partum hemorrhage is prevented or controlled by the hot sterile douche and gauze tamponade of the uterine cavity. I have experienced one complication of the operation not heretofore mentioned. I performed vaginal Cesarean section on a primipara at the thirty-fourth week of gestation. Active treatment for pre-eclamptic toxemia had been instituted for eight days when the patient was seized with a convulsion. She was immediately removed to the operating-room and vaginal Cesarean section was performed, the anterior incision of the cervix only being required. The infant was born alive and lived three months. The mother remained in coma for ten hours and afterward was making a satisfactory convalescence when, on the seventh day, she had a most severe secondary hemorrhage. A large quantity of coagulated blood was removed from between the bladder and cervix and the cavity irrigated with hot sterile salt solution and packed with gauze. No fever followed and healing of the surfaces was complete. Objections to vaginal Cesarean section on the ground that rupture of the uterus may occur in subsequent labor conjure up an imaginary danger that has never been realized yet.

WHO SHOULD OPERATE?

By whom should vaginal Cesarean section be performed? I am led to take cognizance of this question because advice has been given that the general practitioner should be familiarized with the technic of the operation and be taught to perform it when necessary. It goes without saying that no one should attempt the operation without being familiar with the technic, and yet in this day of brilliant surgery the temptation is so great that "fools rush in where angels fear to tread." It needs little or no encouragement to transport the twentieth century physician from his graduating exercises to the operating-room. Men who practice general medicine and use the pen more than the knife are only too prone to undertake all manner of surgical work. I have been informed of four or five instances—and two of them came under my personal knowledge—of men who had attempted the operation and abandoned it because they were not familiar with the procedure. I recognize the fact that throughout the length and breadth of this great land of ours there are many self-reliant men, often indeed pioneers in surgical work, who are practicing the profession in sparsely settled country districts. Necessity makes them surgeons as well as physicians and against such men undertaking vaginal Cesarean section I raise no dissenting voice provided they have surgical skill and know how to do the operation. The difficulties of the operation are not great to any one who is familiar with the anatomy and surgery of the pelvic organs, but it should not be performed by the general practitioner unless he is experienced in surgery, otherwise more lives will be saved and less invalidism result by adhering to the older methods of treating eclampsia.

1909 Q Street, Northwest.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DAVIS AND FOULKROD, CRAGIN AND HULL, FRY, PETERSON AND DE LEE, CONSTITUTING A SYMPOSIUM ON ECLAMPSIA

DR. HENRY SCHWARZ, St. Louis: The report on the changes caused in the liver of dogs by chloroform narcosis is of great interest and will make us hesitate to use chloroform in cases of eclampsia, for fear of lowering the resisting power of our patient. We all agree that we should try to prevent eclampsia rather than to cure it. I am sure that in the case of women who place themselves under medical supervision early in pregnancy, the frequency of eclampsia has been much reduced. A great many women in city and country are delivered by midwives; much would be gained if the medical profession could educate the public so that these women would learn the necessity of placing themselves under medical supervision during pregnancy, even if they continue to be delivered by midwives. Great good would be accomplished if the urine were examined once a month during the first half, and twice a month during the second half of pregnancy. All organs of elimination, the skin, the kidneys and the bowels, should be kept in perfect working order; pregnant women should learn to live on mixed diet. Plenty of vegetables, plenty of fruit, plenty of cereals, little meat and plenty of pure water will do a great deal to prevent eclampsia.

DR. ERNST G. ZINKE, Cincinnati: The pathology of eclampsia has been well presented; but the problem still remains unsolved. It is also a serious question which mode of treatment has contributed most to the reduction of the maternal—and fetal—mortality of this frightful obstetric complication. In my own opinion prophylaxis is of the greatest importance; and intelligent medical treatment, when convulsions supervene, has contributed more to the reduction of the maternal—and fetal—mortality than all the surgical interventions designed for emptying the uterus. In this view I am well supported by authors and practitioners at home and abroad. He who has had years of experience in the practice of obstetrics, will readily admit that many patients with puerperal convulsions have recovered when left alone. In some instances spontaneous delivery has occurred, even with the child living. These cases are not at all isolated. I can portray to you a

picture which I observed in one of the European hospitals nineteen years ago. The impression it made on me has never been obliterated from my mind. This particular patient was left to herself in bed, with only a nurse at her side who saw to it that the patient did not hurt herself as she went from one convulsion into another. The attacks exceeded 100 within three days; and yet, she delivered herself spontaneously and recovered. When I witnessed this performance I thought to myself, that the man who would pursue this mode of treatment of puerperal eclampsia in this country would run the risk of being tarred and feathered. And still it teaches a lesson not to be regarded lightly. Some of you, no doubt, have seen cases of puerperal eclampsia, occurring in the seventh or eighth month, from which the patient recovered, after several seizures, under medical treatment, the pregnancy remaining undisturbed until term, and terminating spontaneously and favorably for both mother and child. This is the other side of the picture, and I merely present it to call attention to the fact, that surgical intervention, though necessary at times, is not the prime factor in the treatment of puerperal eclampsia, and that, if there is a reduction in the mortality of this disease between the present and the past, surgery has contributed little or nothing to it.

DR. J. H. CARSTENS, Detroit: We all admit that we know nothing about convulsions either in children or in adults; that one patient will have one convulsion and die, another will have a hundred and recover, and that another will die after ten or fifteen. We know that with one convulsion the patient may become paralyzed, or may lose one of her senses. We must know that the sooner we stop the convulsion the less liable is the patient to be injured. Now, the fact that my friend from Cincinnati has seen an isolated case in which they left the poor woman for three days and she recovered does not relieve us from the guilt of bad practice when we fold our hands and roll our eyes to heaven and say, "The Lord's will be done." What in the name of heaven are we here for? What is to cure the toxemia? The quickest way is to deliver the woman. Ninety-five per cent. will not have any convulsions after delivery, and those few cases that do occur after delivery simply point to the rule that the convulsion is stopped when the woman is delivered. The quickest method of delivery is the best. If we decide that the method which Dr. Peterson has so beautifully described is the proper one, it is up to everybody to learn that. Every one of us who has had much experience will only be too delighted to show the general practitioner the technic of the operation. We all cut into the bladder once in a while even now with all our experience, and if the poor general practitioner will save that woman's life I will forgive him, if he does the same, for a live woman is better than one that is buried six feet under the ground.

DR. F. J. PLONDKE, St. Paul: It is true that after delivery in the majority of cases the convulsions cease. There are, however, a certain number of cases in which they continue, and in still others they do not develop until after delivery has taken place. We have heard to-day that, while we do not know the exact nature of the toxins causing puerperal eclampsia, we do know that they are found in, and are distributed by, the blood-current, and that sooner or later they cause irritation of the liver and kidney cells. Taking this for granted the indication for treatment, whether the convulsions develop before or after delivery, are the same; viz., to eliminate as much of the poison as possible, and neutralize, by dilution or otherwise, what remains. I have met these indications in a number of cases during the past two years by opening a vein and inserting a glass cannula in the distal end, through which blood is allowed to flow away; through the same opening, but into the proximal end, another cannula is inserted through which physiologic salt solution is carried into the vein. The amount of blood withdrawn, ranging from 15 to 30 ounces, depending on indications (usually about 10 ounces), was allowed to flow away before the introduction of salt solution was begun; from 1 to 2 quarts of salt solution was used in each case.

I have used this treatment in ten cases; seven puerperal and three of convulsions in chronic nephritis, with the result that in each case the convulsions ceased at once and in no case did they reappear.

I realize that these are only a few cases from which to draw a conclusion, but the results have convinced me that the treatment merits further trial.

DR. T. M. BURNS, Denver: I wish to make a few remarks on the lack of danger in the use of Cesarean section for eclampsia. During the last five months I assisted at one operation and performed the operation nine times. Only two of the operations were for eclampsia, but in both of these we had excellent results. The operation of Cesarean section *per se* is without any shock whatever. The immediate results are perfect. We get a living child and the mother is just as good after the operation as before. The patient gets up in better condition than from any other abdominal operation. Even in the infected cases hysterectomy is unnecessary. Skilled assistants are essential, especially in giving the anesthetic and taking care of the baby.

DR. M. I. ROSENTHAL, Fort Wayne: From the standpoint of the gynecologist this operation presents another advantage which I believe will bear emphasis. Lacerations of the cervix frequently do not amount to anything, are easily repaired and are not of serious significance. A deep laceration laterally in the cervix extending up into the vault of the vagina, making a tear into the broad ligament, is a very serious thing, however. You have formed a fibrous tissue in the broad ligament, and chronic invalidism is produced which you are not able to reach by plastic operation. Such a tear in the broad ligament produces a very serious condition. This operation fixes the trauma in the cervix at a point where it is rather an immaterial affair, so that if it does not heal it can be repaired or left as it is.

DR. C. A. RITTER, Kansas City, Mo.: Among the most important questions requiring attention and demanding a rational answer is, Where, when, and how are we first to detect the danger-signals of eclampsia, and what are the prophylactic measures best calculated to furnish protection to the pregnant woman? In order that the greatest safety may be given her, she should be placed under the care of a physician from the earliest weeks of gestation to the close of the puerperium. It is our duty as physicians to educate the public, showing the necessity of more extended time and attention being given the prospective patient as she travels along the border line between health and disease. By early placing her under the care of an attendant, many of the worst complications of eclampsia may be prevented. We assert that the symptomatology of eclampsia is shot through and through with danger signals of sufficient importance to enable the close observer and intelligent physician to institute prophylactic treatment, and thereby modify or cut short the severity and dangers of the eclamptic storm. As to preventive treatment, diet and elimination, the latter by the way of skin, kidneys and bowels, is of greatest importance. I have received benefits from doses of veratrum, using six to ten drops hypodermatically. In the above dosage, we reduce arterial tension, securing the full physiologic benefits in the way of diuretic, diaphoretic, and antipyretic action. I have had good results in withdrawing from 10 to 20 ounces of blood, replacing the same with similar amount of physiologic saline solution. The choice of operation depends on the character of the individual case. It is impossible to lay down any hard or fast rules. Manual dilatation, with delivery of child by version or forceps extraction, great care being exercised to reduce shock and traumatism to the minimum, is the operation largely employed in the private practice, while vaginal or abdominal Cesarean section is more frequently adopted in hospital work.

DR. C. FOULKROD, Philadelphia: Dr. Carstens spoke of the expectant treatment. We have the records of the Stroganoff method in which the patients are put in a quiet room, the bowels kept open and good results are obtained. Then there is the argument advanced that if a toxemic patient is taken early enough, put to bed, given a milk or peptonized milk diet, she will not have convulsions. I have seen patients

treated in this way come back almost from the grave. Stroganoff says that if we let the patient alone Nature will take care of the separation and the delivery of the baby by the cutting off of the placental circulation. I am inclined to deliver because I think my results have been better. If bleeding is needed I find the results are better if this is done after delivery.

DR. E. T. HULL, New York: Bleeding used to be done at the Sloane as a routine. Since then better results have been obtained by the use of veratrum viride and nitroglycerin as outlined, repeating the dosage if necessary to get the desired result. It is well recognized that once the blood-pressure is down and once the pulse is slow, convulsions will no longer occur. If we were not able to bring about this condition by medication, then bleeding might be done, but that is very rarely necessary. In the third stage, bleeding may be allowed from the uterus with the idea of getting rid of toxins. As far as introducing salt solution is concerned I think that has to be done cautiously. With an overwatery condition of the blood one of the dangers is increased, that of edema of the lungs.

DR. H. D. FRY, Washington, D. C.: When these cases have reached the point of eclampsia they have gone too far to talk about preventive treatment. In regard to the let-alone plan of treatment the statistics have shown that surgery does a great deal of good in these desperate cases; that the mortality has been reduced by immediately emptying the uterus by surgical means and not using the expectant treatment. The mortality under the expectant treatment is between 30 and 40 per cent., and by immediate delivery, between 3 and 7 per cent. I was much surprised last month to hear Dr. Hirst read a paper advocating medical means in preference to emptying the uterus. He is the only obstetrician whom I have known to recently bring out such a view.

This sleight-of-hand technic described by Dr. Peterson, in which now you see the bladder and now you don't, is very alluring. It is easy with a piece of gauze to push the bladder out of the way, but you cannot ignore the uterovesical ligament. Dr. Bandler in his paper this morning brought out an important point in this connection showing how to avoid injury to the bladder. An important step when taking off the forceps is to pass a heavy ligature to hold the bladder back, and to act as a guide in bringing the cervix down.

I always drain, putting in gauze. In regard to chloroform, I saw a case some time ago which emphasized the dangers of using this anesthetic. The woman was delivered with forceps in the right occipitoposterior position, chloroform being the anesthetic. The lacerations were afterward repaired and the patient got along beautifully until the third day. She had had no symptoms of toxemia and the urine was perfectly clear. In thirty-six hours she was dead. The urine had been examined repeatedly without finding albumin or casts or the slightest trace of trouble with the kidneys. It was a plain case of liver poisoning from the use of chloroform and that case taught me a valuable lesson.

In a case of eclampsia with the woman undelivered the best way to bring down the blood-pressure is to empty the uterus. The blood-pressure may be brought down by bleeding, by giving veratrum viride or by rupturing the membranes; but the quickest way is to empty the uterus.

Double Pregnancy in a Uterus Didelphys.—An instance of a double pregnancy in a uterus didelphys is reported by M. Rochard (*Progrès méd.*, Nov. 5, 1910): The woman was admitted to the hospital with symptoms of an imminent abortion. On examination the vulva, vagina and colon were found to be normal, but the uterus was much enlarged, especially laterally. In Douglas' pouch was found a soft painful mass which was thought to be a swollen tube. An urgent laparotomy showed a uterus didelphys with a six weeks' pregnancy in each corpus. Each uterus communicated with a single opening and had a single ovary. On account of the probability of serious accidents in such cases if left to go to term it was deemed prudent to do a hysterectomy, which was followed by rapid recovery.

THE PREVENTION OF INFANT MORTALITY *

GOTTFRIED KOEHLER, M.D.
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AND C. ST. CLAIR DRAKE, M.D.
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CHICAGO

The importance of preventing sickness and death in infancy has been generally recognized during the last decade by many European countries. In our country this problem has been growing, and when carefully analyzed is found to be really of greater magnitude than the problem of preventing tuberculosis, when considered from the standpoint of deaths involved. The organization of the American Association for the Study and Prevention of Infant Mortality, in November, 1909, has resulted in a more general recognition of conditions in this country, and has been followed by efforts to deal with the existing conditions, together with their causes.

Sanitarians hold that the infant mortality rate is a test of real sanitary accomplishment. Sir John Simon pointed out that a high infant mortality rate indicates the existence of evil conditions in the homes of the people. George Newman, in the preface of his recent treatise on this subject, concludes that the loss of infant life is in some way intimately related to the social life of the people.

The young of all animals are more susceptible than the adult to the influences of unfavorable circumstances in the environment. With advancement in civilization, the infant death-rate should become less. Man has succeeded in guarding judiciously against the death of the young in his domestic animals, but has not succeeded equally well with his own race. Comprehensive statistics are not available on the death-rate of young cows and horses, but we feel safe in making the assertion that the rate is lower than the infant mortality rate. In the registration area of the United States nearly one-fifth of all deaths is of infants under one year, and one-fourth of the total mortality is contributed by deaths of children under 5 years of age.

In Chicago the total deaths during 1909 were 31,300; of this number 9,368 were in children under 5 years, and 6,357 in children under 1 year of age. Thus the deaths in children under 5 years constituted approximately one-third of all deaths.

STUDY OF INFANT MORTALITY STATISTICS

That the cause must be known before a remedy can be applied is a well-established rule in medical practice. Sociologic problems have to be dealt with in the same manner. Thus before suggesting preventive measures, it behooves us to make a survey of the existing conditions and study them in relation to prevailing etiologic influences.

The general death-rate from all causes in this country and nearly all other civilized countries has been steadily declining, while the infant mortality rate has remained stationary, or at least has shown no material reduction.

For purposes of comparison Table 1 from Newman, contrasting the birth-rate, death-rate and infant

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* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-First Annual Meeting, held at St. Louis, June, 1910.

mortality rate of the principal European countries during the last and previous decade, is useful.

Table 2 shows the infant mortality in Chicago, compared with other American and European cities.

The studies of Newman on the distribution of infant mortality show that the rate is higher in cities than in rural communities. The diagram (Fig. 1) from Devine contrasts the infant mortality rates in the city and country.

TABLE 1.—BIRTH-RATE, DEATH-RATE AND INFANT MORTALITY RATE OF PRINCIPAL EUROPEAN COUNTRIES

	Birth Rate		Death Rate		Inf. Mort. Rate		
	1883-92	1893-02	1883-02	1893-02	1883-92	1893-02	03
England and Wales	31.9	29.3	18.9	17.6	144	152	132
Scotland	31.8	29.9	19.2	18.0	120	127	...
Denmark	31.6	29.9	18.7	16.5	135	133	...
Russia	48.4	48.8	34.6	32.9	270	272	...
Germany	36.6	36.9	24.7	21.5	...	195	...
Prussia	37.2	36.5	24.2	21.2	207	199	194
Austria	37.7	37.2	29.1	25.9	...	227	...
Hungary	45.5	39.9	32.3	26.3	...	224	212
Netherlands	33.7	32.3	20.9	18.5	176	152	135
Belgium	29.8	28.9	20.7	18.3	161	157	155
France	23.4	22.0	22.2	20.8	167	158	...
Spain	36.0	34.7	31.9	28.7	...	190	...
Switzerland	27.8	28.2	20.3	18.5	160	145	133
Italy	37.5	34.2	26.9	23.3	209	173	...

TABLE 2.—PROPORTION OF INFANTS WHO DIE BEFORE REACHING THE AGE OF ONE YEAR. DATA FOR CERTAIN LARGE CITIES FOR THE DECADE 1898-1907

Cities	Births	Deaths Infant	Per cent.
Buenos Aires	335,654	33,305	9.9
Paris	539,372	61,084	11.3
Chicago	457,604*	55,564	12.2
Amsterdam	149,922	18,483	12.3
Rome	119,674	15,786	13.2
London	1,195,668	187,593	14.5
New York (M. & B.)	610,360	98,661	16.1
Brussels	41,751	6,954	16.7
Hamburg	204,467	35,499	17.4
Vienna	509,918	92,964	18.2
Warsaw	247,135	45,243	18.3
Venice	39,725	7,307	18.2
Berlin	496,702	100,033	20.1
St. Petersburg	382,270	98,317	25.7
Moscow	380,727	131,605	34.6

*Estimated for intercensal years.

TABLE 3.—CAUSES OF DEATH AMONG CHILDREN UNDER ONE YEAR OF AGE FOR THE FIVE-YEAR PERIOD, 1904-1908

	Total	Per cent. of total under one year
Diarrheal disease group	12,176	39.8
Diarrheal diseases*	9,709	31.7
Convulsions	2,019	6.6
Gastritis	448	1.5
Congenital defects and accidents	7,362	24.0
Premature birth	2,474	8.1
Congenital debility	2,307	7.5
Injuries at birth	409	1.3
Other congenital defects	2,172	7.1
Impure-air disease group	6,298	20.6
Pneumonia	4,308	14.1
Bronchitis	1,896	6.2
Influenza	94	0.3
Four chief acute contagious diseases	993	3.2
Whooping-cough	541	1.8
Measles	195	0.6
Diphtheria	161	0.5
Scarlet fever	96	0.3
Meningitis (simple)	722	2.4
Tuberculosis (total)	486	1.6
Meningeal	195	0.6
Pulmonary	183	0.6
Other	108	0.4
Venereal disease	386	1.3
Syphilis	368	1.2
Gonorrhea	18	0.1
Violence (total)		
Sunstroke and heat prostration	27	0.09
Suffocations (overlying, etc.)	75	0.25
Other accidents	84	0.27
Homicide	107	0.35
Diseases of urinary system	...	0.6
Nephritis (acute)	146	0.5
Other urinary diseases	47	0.1
Rickets	146	0.5
Tetanus and trismus nascentium	100	0.3
Total deaths under one year of age	30,598	

* Diarrheal diseases include cholera infantum, summer complaint, dysentery, diarrhea, gastro-enteritis, enteritis, etc.

An analysis of infant mortality in Chicago, as to the causes, distribution and relation to environmental conditions, is given in Table 3.

An analysis of the age distribution of children who die before completing the first year of life shows that approximately 7 per cent. die in less than twenty-four hours after birth, at an average age of 4 hours, 41 minutes; 14 per cent. in from one to seven days, at an average age of 2 days, 17 hours; 53 per cent. in from seven days to six months, at an average age of 2 months and 10 days; and 26 per cent. when between 6 months and one year of age, at an average age of 8 months and 15 days. The average age of those dying before reaching the age of one year was 3 months and 19 days.

Out of an approximate total of 152,500 born in Chicago in the three years 1907-1909, 1,447, or 9.5 per thousand, died in less than twenty-four hours after birth; 4,354, or 28.5 per thousand, died in less than seven days; 14,479, or 96.8 per thousand, died in less than six months; 20,012, or 131 per thousand, died before completing the first year of life. Chicago's record is much the same as other large American cities.

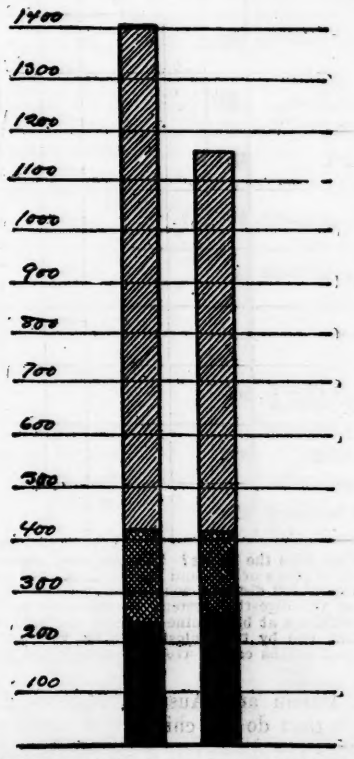

Fig. 1.—Infant mortality rates per 10,000 births in 1902.
Under 1 year, London, 1,403.0; rural counties, 1,158.8
Under 1 month, " 417.5; " 414.6
Under 1 week, " 240.5; " 258.8

The effects of population congestion, nationality, sanitary conditions and other environmental influences affecting infant life, are portrayed in a striking manner by the spot maps and diagrams of the Chicago Health Department which are herewith presented.

On the outline ward map of Chicago (Fig. 3) are shown the location of 1,570 infant deaths by means of spots. These spots are thickest in the areas of greatest density of population, and out of all reasonable proportion to the number of inhabitants or to the number of births occurring in these areas. They are thickest where the Lithuanians, Poles, Bohemians and Italian people are present in large numbers. They are thickest where the sanitary conditions are bad, where poverty and ignorance are most prevalent, where factories, in which many of the mothers or expectant mothers are employed, crowd close on the homes.

A study of the infant mortality statistics with relation to the nationality of mothers shows some startling conditions: Children of Lithuanian, Polish, Hungarian, Bohemian, Italian and Austrian mothers die in far greater ratio than do the children of mothers of other nationalities. The difference is shown in Figure 4.

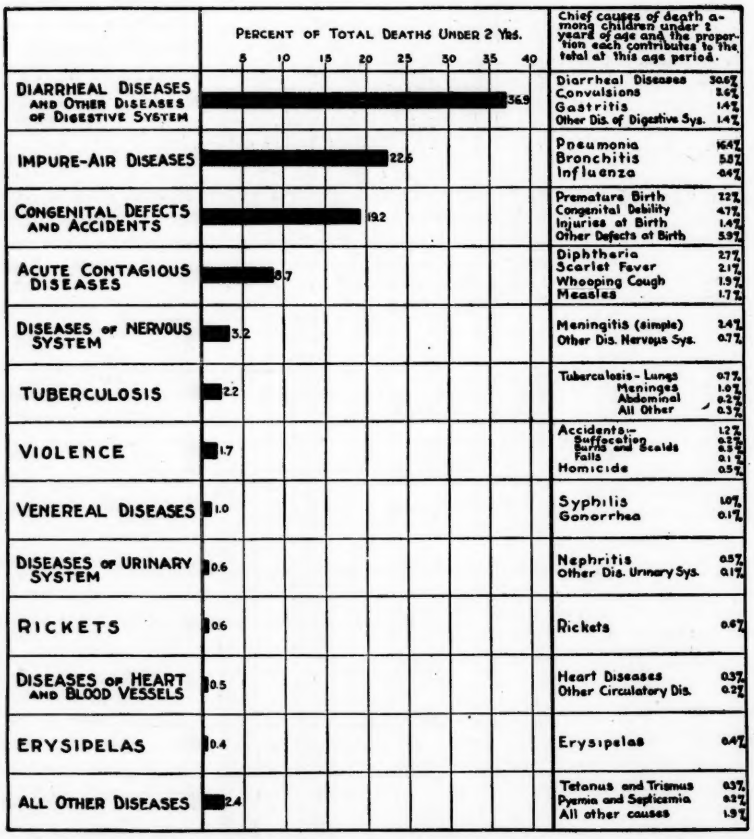

Fig. 2.—What kills the babies? This diagram shows the chief causes of death among children under 2 years of age and the ratio of each cause to the total deaths in this age division. In each 100 deaths among children under 2 years of age thirty-seven are caused by diseases of the digestive system, twenty-three by the impure-air diseases, nineteen by defects and accidents at birth, nine by acute contagious diseases, three by diseases of the nervous system, two by tuberculosis, two by violence, one by venereal diseases, etc.; 70 per cent. of such deaths can be avoided—with proper care.

PREVENTIVE MEASURES

In Chicago, as in most other large American cities, the death-rate among children during the last two decades has been below that of the preceding years, but, unfortunately, the rate of the last decade has not shown a decrease which is proportionate to that of the ten-year period preceding.

An analysis of the statistics of contagious diseases against which preventive measures have been applied with increasing vigor during the last ten years, is shown in condensed form in Figure 5.

We have progressed more in our fights against smallpox, malaria, diphtheria and typhoid than we have against the chief cause of infant mortality—the diarrheal diseases.

If we may count deaths from premature birth and injuries at birth as preventable—and surely a very large percentage of them are—there would be marked increases to show on the debit side of this sanitary ledger.

MILK AS A FACTOR

The general improvement of the market milk-supply, which began fifteen or twenty years ago, was followed by some slight lowering of the diarrheal disease deaths, not by any decided decrease. But the general improvement in market milk does not give us a milk-supply suitable for young infants, this being proved by the average bacterial count of all large cities, taken from the Hygienic Laboratory Bulletin, No. 56, and given in Table 4.

That a further reduction in the bacterial content will result in a lowering of infant mortality can be seen from (1) the statistics of infant mortality in New York before and after the establishment of the Straus milk stations; (2) from the mortality at the infant asylum at Randall's Island before and after the use of pasteurized milk; (3) the lowering of infant mortality in Chicago after the pasteurization of 60 per cent. of the market milk, and (4) comparison of infant mortality statistics in cities with good and ordinary milk-supply.

Infant Mortality in New York City.—Pasteurized milk was first made available for infants in general in New York City in 1893, in which year Nathan Straus dispensed 34,400 bottles of milk so prepared from one depot. In 1894, 339,494 bottles were issued, in 1895, 666,622, and in 1896, 666,941. In 1905, 2,668,397 bottles were dispensed and 1,016,731 glasses of pasteurized milk were bought at the booths in the parks of New York City. In 1906, seventeen Straus stations dispensed 3,142,252 bottles of pasteurized milk and 1,078,405 glasses. Prior to the beginning of this work the death-rate of children under 5 years in New York City was over 96.2 out of every thousand, and in June, July and August the death-rate of children was at the rate of 136.4 per thousand per annum. With the increased use of pasteurized milk the death-rate fell to 55 per thousand in 1906, and the summer death-rate to 62.7 per thousand.

The Mortality at the Infant Asylum at Randall's Island.—When the infants in the care of the City of New York were fed on milk from a carefully selected herd pastured on the island, the death-rate was as shown in the first part of Table 5. A pasteurizing plant

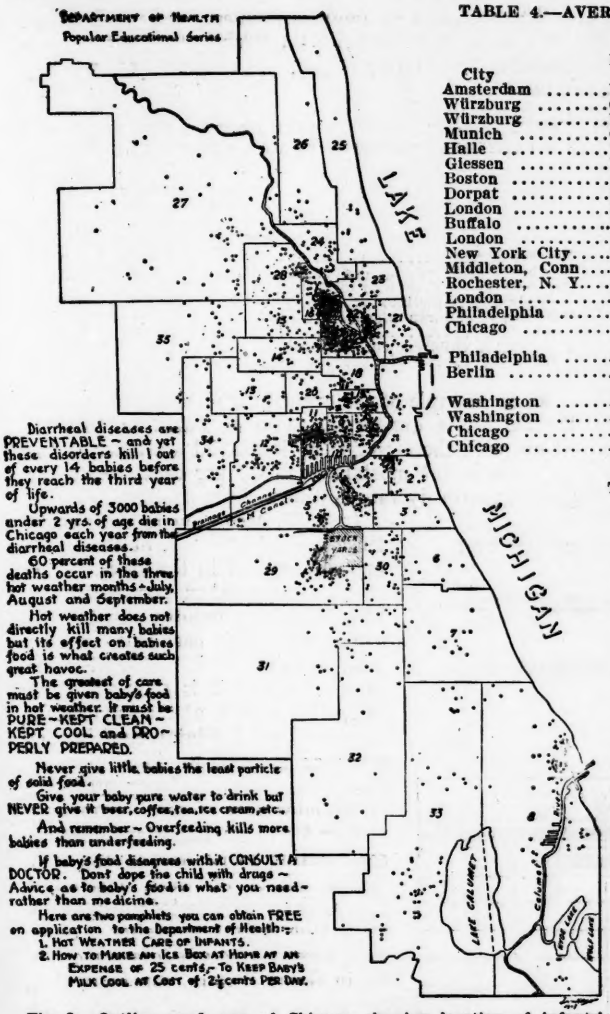
DEPARTMENT OF HEALTH
Popular Educational Series
Diarrheal diseases are PREVENTABLE ~ and yet these disorders kill 1 out of every 14 babies before they reach the third year of life.
Upwards of 3000 babies under 2 yrs. of age die in Chicago each year from the diarrheal diseases.
60 percent of these deaths occur in the three hot weather months ~ July, August and September.
Hot weather does not directly kill many babies but its effect on babies food is what creates such great havoc.
The greatest of care must be given baby's food in hot weather. It must be PURE ~ KEPT CLEAN ~ KEPT COOL and PROPERLY PREPARED.
Never give little babies the least particle of solid food.
Give your baby pure water to drink but NEVER give it beer, coffee, tea, ice cream, etc.
And remember ~ Overfeeding kills more babies than underfeeding.
If baby's food disagrees with it CONSULT A DOCTOR. Don't dope the child with drugs ~ Advice as to baby's food is what you need ~ rather than medicine.
Here are two pamphlets you can obtain FREE on application to the Department of Health:~
1. HOT WEATHER CARE OF INFANTS.
2. HOW TO MAKE AN ICE BOX AT HOME AT AN EXPENSE OF 25 cents.~ TO KEEP BABY'S MILK COOL AT COST of 2½ cents PER DAY.
LAKE
MICHIGAN
Stock yards
Chicago River
Calumet River
Lake Calumet
Calumet Harbor
Lake Michigan

Fig. 3.—Outline ward map of Chicago, showing location of infants' deaths from diarrheal diseases during the summer of 1909; 1,570 deaths in July, August and September.

TABLE 4.—AVERAGE BACTERIAL COUNT OF MARKET MILK IN VARIOUS LARGE CITIES

City	Investigated by	Samples	Date	Count	
Amsterdam	Von Geuns	..	1885		10,545
Würzburg	Clauss	8	1889	1,000,000 to	2,000,000
Würzburg	Hohenkamp	..	1889	1,900,000 to	7,200,000
Munich	Cnof	..	1889	200,000 to	6,000,000
Halle	Renk	..	1891	6,000,000 to	30,700,000
Giessen	Uhl	30	1892	83,000 to	169,600,000
Boston	Sedgwick & Batchelder	50	1892	708,000 to	4,200,000
Dorpat	Knochenstiern	..	1893	10,200,000 to	30,000,000
London	Rowland	25	1895	500,000	
Buffalo	Frye	15	1896	25,000 to	43,600,000
London	Pakes	..	1900	3,000,000 to	4,000,000
New York City	Parke	..	1901	300,000 to	5,000,000
Middleton, Conn.	Burrage	..	1901	11,000 to	300,000
Rochester, N. Y.	Goler	86	1903	837,000 to	5,000,000
London	Dodd	..	1904	4,800,000	
Philadelphia	Byrnes	..	1904	1,600 to	21,000,000
Chicago	Jordan	..	1904	16 per cent. samples contained over	20,000,000
Philadelphia	Bergey	..	1904	Average	4,800,000
Berlin	Proskauer, Seligmann, Croner	..	1907	Average	3,500,000
Washington	Hygienic Laboratory	..	1906	Average	22,134,000
Washington	Hygienic Laboratory	..	1907	Average	11,270,000
Chicago	Tonney (Raw Milk)	639	1909	Average	3,239,000
Chicago	Tonney (Past. Milk)	..	1909	Average	752,975

TABLE 5.—DEATH-RATE AT THE INFANT ASYLUM, RANDALL'S ISLAND

	Children treated	No. of Deaths	Percentage
BEFORE THE USE OF PASTEURIZED MILK			
1895	1,216	511	42.02
1896	1,212	474	39.11
1897	1,181	524	44.38
Total	3,609	1,509	41.81
AFTER THE USE OF PASTEURIZED MILK			
1898	1,284	255	19.80
1899	1,097	269	24.52
1900	1,084	300	27.68
1901	1,028	186	18.09
1902	820	181	22.07
1903	542	101	18.63
1904	345	57	16.52
Total	6,200	1,349	21.75

was installed in the early part of 1898. No other change in diet or hygiene was made.

Is it not significant that the only marked reduction in deaths in Chicago during the year 1909, as compared with the preceding year, was among the babies, the milk feeders? At all other ages, excepting 10 to 20 years, there were increases, as will be seen by Table 7.

TABLE 6.—THE LOWERING OF INFANT MORTALITY IN CHICAGO AFTER PASTEURIZATION OF SIXTY PER CENT. OF THE MARKET MILK-SUPPLY IN 1909 *

Year	Deaths	Rates per 100,000
1899	5,917	363
1900	5,726	337
1901	5,407	308
1902	5,514	303
1903	5,699	304
1904	5,387	279
1905	6,251	314
1906	6,554	319
1907	6,720	319
1908	6,908	319
Average 10 years	6,008	316
1909	6,389	287

* Prior to 1907 all deaths of children who lived less than one day were excluded from the mortality count. Since 1907 such deaths have been included and they constitute 7.2 per cent. of the total mortality under one year of age. Therefore, to make this statement comparable, 7.2 per cent. has been added to the tabulations of the years 1899 to 1906, inclusive.

TABLE 7.—AGES AT WHICH LIVES WERE SAVED DURING THE YEAR 1909

Years	Deaths 1909	Deaths 1908	Saving	Loss
Under 1	6,387	6,908	521	...
1 to 5	2,981	2,768	...	213
5 to 10	768	759	...	9
10 to 20	1,179	1,199	20	...
20 to 30	2,676	2,573	...	103
30 to 40	3,261	3,085	...	178
40 to 50	3,768	3,553	...	215
50 to 60	3,501	3,334	...	167
60 to 70	3,195	2,965	...	230
70 to 80	2,367	2,240	...	127
Over 80	1,158	1,150	...	8

TABLE 8.—COMPARISON OF INFANT MORTALITY STATISTICS IN CITIES WITH GOOD AND ORDINARY MARKET MILK-SUPPLY

	1908	1909
GOOD MILK-SUPPLY (Pasteurized)		
Copenhagen	150	109
Buenos Aires	86	88
Paris	103	96
ORDINARY MILK-SUPPLY		
London	113	108
New York	128	130
Berlin	168	158
Vienna	183	172
Chicago	135	125

There are other significant factors besides the milk-supply to be taken into consideration:

In American cities the change in the immigrant population during the last two decades is an important factor. The change is illustrated by Table 9.

Thirty years ago the immigrant or foreign population of cities consisted of Germans, Scandinavians, English or Irish. Now the Slavs and those from southern European countries are in excess. They come from the European countries which have the highest infant

TABLE 9.—RECENT CHANGES IN THE RACE OF IMMIGRANTS; COMPARISON OF CERTAIN NATIONAL GROUPS *

	Per cent. of immigrants from Austria-Hungary, Italy and Russia in total immigration.†	Per cent. of immigrants from United Kingdom, France, Germany and Scotland in total immigration.
1869	0.9	73.8
1880	8.5	64.5
1890	34.0	57.7
1891	39.6	52.1
1892	44.8	53.9
1893	42.7	48.2
1894	42.6	47.9
1895	39.8	52.9
1896	53.9	38.5
1897	53.0	37.6
1898	57.9	33.3
1899	64.4	27.8
1900	66.7	25.3
1901	68.6	22.5
1902	70.6	20.3
1903	66.8	22.4
1904	63.4	25.0
1905	66.4	24.2
1906	68.5	18.3
1907	71.3	17.1

* Prepared by Immigration Restriction League from Quarterly Report of Bureau of Statistics, No. 2, Series 1892-1893, and Reports of Commissioner-General of Immigration.
† Includes Poland to 1898.

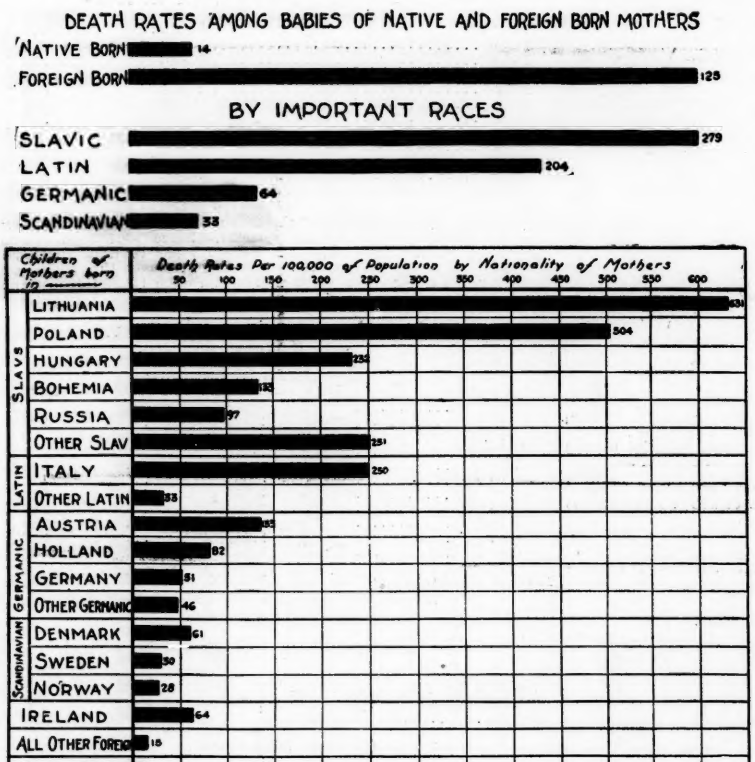

Fig. 4.—Chart of infant death-rates from diarrheal diseases in hot weather in Chicago, arranged by nationality of mothers.

mortality rates, and with the change in environment and industrial states of both sexes, conditions result which favor high infant mortality.

That the changed industrial conditions are an important factor has been shown by Devine in his studies of the mortality rates in two manufacturing cities in Massachusetts, compared with the rates observed in other American cities.

The statistics of families studied for Dr. Hamilton by Theresa McMahon, Ph.D., (Table 10) show the percentage of children dying in families of working women.

TABLE 10.—RELATION OF NUMBER OF WORKING WOMEN TO CHILDREN'S DEATHS IN 600 FAMILIES IN CHICAGO

	Women worked after marriage	Women worked before marriage	Women worked before and after marriage
Number of women	114	307	88
Number of children who died	200	504	150
Per cent. of children who died prematurely and at birth	39	33	36
Per cent. of children who died under 3 years	56	61	60
Per cent. of children who died over 3 years	4	5	4

As an example of the opposite condition may be cited the death-rate during the siege of Paris, in 1870-71, where, with the cessation of industrial activities in the city, the infant mortality fell 40 per cent., while the general mortality rate is said to have doubled.

In 1880, according to the Census Bureau, 25.8 per cent. of the entire population lived in the cities. Since that time the urban population has been increasing rapidly. In 1890 it constituted 32.9 per cent. of the total population; in 1900, 37.3 per cent., and now it is estimated that fully 41 per cent. of the inhabitants of the United States live in the cities of more than 4,000 population. This same tendency prevailed in the later days of the Roman Empire and was an important element contributing to its decline and fall.

The effects of such migration always have manifested themselves by a high infant mortality. Newman, after a study of infant mortality in Great Britain, concludes that the distribution of infant mortality follows mainly in the wake of urbanization—that is, high density of population—combined with industrial and social conditions.

Of the many other factors influencing infant mortality, which may bear on the results of preventive measures, excessive child-bearing may be briefly considered. Alice Hamilton reported at the New Haven meeting on investigations made in Chicago, and concludes that excessive child-bearing makes for excessive child mortality. Table 11, taken from her report, shows that the increase in size of the families is paralleled by the increase in the proportion of children lost.

Table 12, compiled from her report, shows the relation of nationality, child-bearing and infant mortality rate.

The high birth-rate and death-rate here shown among the Slavs and Italians is closely related to the deaths occurring from accidents at birth, and from prematurity. Tallent states that midwives attend 47 per cent. of all cases in Chicago, and 86 per cent. among the

Italian population. Accurate data on this question cannot be obtained from birth certificates, because complete returns are not made; but from a study of the 485 names of midwives practicing in Chicago, it is found that 35 per cent. are Slavic and 6 per cent. are Italian. The prevailing custom is that they practice, each among her own nationality.

TABLE 11.—INFANT DEATHS PER THOUSAND BIRTHS

Families of 4 children and less	118
Families of 6 children and more	267
Families of 7 children and more	280
Families of 8 children and more	291
Families of 9 children and more	303

TABLE 12.—INFANT DEATHS PER THOUSAND IN RELATION TO NATIONALITY AND CHILD-BEARING

	Group 1, 8 children and more.	Group 2, 4 children and less.	Av. No. children per family.	Av. No. deaths per family.
Jews	260	81	5.7	1.1
Mixed	271	98	5.1	1.0
Irish	291	113	6.6	1.7
German	288	186	5.7	1.3
Slavs	328	122	6.5	1.7
Italians	301	125	6.6	1.9

PREVENTIVE MEASURES SUGGESTED

The measures which we suggest and briefly summarize, are made with a view of remedying the existing direct and indirect causes of sickness and death in children, as shown by the study presented.

1. *Causes Operating Directly on the Mother.*—The causative conditions that need correction are neglected education, new environment, urbanization, female employment, improper care during pregnancy, and later neglected breast-feeding, overwork, bad health, alcoholism and poverty.

It is not easy to suggest a remedy for all of these. Some of these influences can and will be eliminated by proper enactment and enforcement of laws. The personal factor can be treated only by educational measures. Such measures promulgated in the public schools will have their effect in time. The present generation is much more difficult to reach. The procedure now followed in European countries is yielding results. For a detailed summary of these methods and work, embodied in the Infant Welfare Movement, I refer to Abt's article.[1]

Starting in 1892, with Budin's consultation for nurslings whose mothers were delivered in his clinic, the movement has progressed and with the recent building of the Augusta Victoria House at Charlottenburg, near Berlin, the work in Germany has assumed a national aspect.

The English method, as practiced by the Westminster Health Society of visiting mothers, is extremely practical. Voluntary lady visitors who have received some training call on the mothers in their localities, often before the baby is born, and after birth make calls as frequently as it seems necessary.

The calling on cases of reported sickness sometimes practiced in American cities does not strike at the root of the evil, yet it is better than inactivity. The baby-tent idea, used effectively in Chicago, has served in manifold ways to aid mothers in the care of sick and well children.

2. *Causes Operating Directly and Indirectly on the Child.*—Causative and contributory existing conditions that require correction are: incomplete birth registration, improper care, no reports of morbidity.

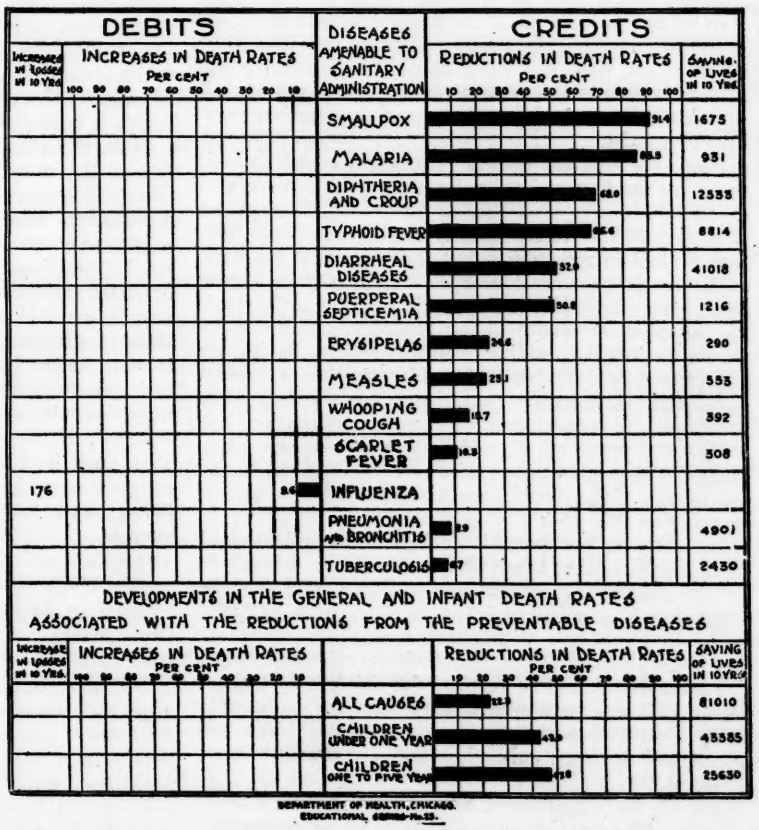
DEBITS
DISEASES AMENABLE TO SANITARY ADMINISTRATION
CREDITS
INCREASES IN DEATH RATES PER CENT
REDUCTIONS IN DEATH RATES PER CENT
SAVING OF LIVES IN 10 YRS.
SMALLPOX 91.4 1675
MALARIA 83.5 931
DIPHTHERIA AND CROUP 68.0 12535
TYPHOID FEVER 66.6 8814
DIARRHEAL DISEASES 52.9 41018
PUERPERAL SEPTICEMIA 50.8 1216
ERYSIPELAS 34.6 290
MEASLES 25.1 555
WHOOPING COUGH 15.7 392
SCARLET FEVER 10.3 308
176
84
INFLUENZA
PNEUMONIA AND BRONCHITIS 2.9 4901
TUBERCULOSIS 4.7 2430
DEVELOPMENTS IN THE GENERAL AND INFANT DEATH RATES ASSOCIATED WITH THE REDUCTIONS FROM THE PREVENTABLE DISEASES
INCREASES IN DEATH RATES PER CENT
REDUCTIONS IN DEATH RATES PER CENT
SAVING OF LIVES IN 10 YRS.
ALL CAUSES 22.3 81010
CHILDREN UNDER ONE YEAR 43.9 43585
CHILDREN ONE TO FIVE YEARS 47.8 25630
DEPARTMENT OF HEALTH, CHICAGO.

Fig. 5.—Sanitary trial balance: The City of Chicago in account with the preventable diseases; losses and gains during the last ten years as compared with the preceding decade.

It is impossible to apply a remedy if it is not known where the trouble exists. If the well or sick children are to be visited and taken care of, their location has to be determined. Births should be reported within twenty-four hours. Following this, advice should be given the mother in regard to the proper care and feeding of the child. Breast-feeding should be encouraged. Budin's experience has shown how much more generally it can be carried out when efforts are made to do so.

Leaflets, mailed to the mother on receipt of the birth report, are useful; but the best results are obtained by personal supervision. The obstetrician or midwife makes the initial call in practically all births, and in the absence of other agencies is in duty bound not only to attend to the birth and puerperium, but also to see that the child is properly started in life. Midwives with their practice limited by law to obstetrics are in need of enlightenment with regard to their duties to

1. Abt, Isaac A.: A Survey of the International Movement Concerning Infant Welfare, Illinois Med. Jour., April, 1910, p. 428.

humanity. When this is properly presented to them and it is shown of what great service judicious advice given by them to the mother will mean for the welfare of the child, they may be made influential agencies in the prevention of infant mortality. In Chicago a correspondence school for midwives is conducted by the Health Department with gratifying results.

Hedger, reporting on the work done in Chicago during the summer of 1909, says that 17,437 families were called on, and 2,876 sick children were found; 2,057 had diarrhea and 800 had other affections. Infantile diarrhea should be made a reportable disease.

3. *Indirect Causes to be Remedied by Action on the Part of the Authorities.*—The baneful influences of bad sanitation, improper housing, congestion in cities, filthy environment, flies, bad water and an unclean milk-supply are factors in the cause of disease and death of children, as well as of adults, that require correction wherever they exist.

Since the diseases due to impure milk and bad air make up the first and third largest groups of causes of death in infancy, it behooves us to eliminate these influences to the fullest extent. High-grade, clean milk may be had in most cities, but the price is prohibitive, as far as the poor are concerned. Infants' milk depots have been established and are distributing milk specially adapted, in regard to purity and chemical composition, to infants' feeding. Unfortunately, babies are too frequently supplied with milk from those sources only after sickness or nutritional disturbances have developed, and even then such milk stations are not within the reach of all. Milk-dealers who can make deliveries throughout the entire city should come to the aid of the philanthropic organizations which are now carrying on this work.

In addition, the general market milk-supply should be improved so that those who must rely on this source in the feeding of infants and children may not be unnecessarily exposed to infection. All milk not produced in accordance with strict sanitary requirements should be properly pasteurized under municipal control.

Pure water should be supplied for children in the hot season. This is mentioned to emphasize the findings of Hedger and others, namely, that many children are given food and food only when they are crying because of thirst.

Air, the first requirement of the child at birth, should be pure. The curative powers of pure air in pulmonary diseases, marasmus, rickets, summer diarrhea, and its soothing effect on the crying and restless child, have been recognized more and more of late, and necessarily we must draw the conclusion that if pure air is beneficial for the sick it must be equally good for the well.

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CACTUS GRANDIFLORUS

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The testimony concerning the therapeutic value of *Cactus grandiflorus* is conflicting and, indeed, absolutely contradictory, since many observers have stated that they found it to be a most useful cardiac remedy, whereas others have pronounced it absolutely inert.

Positive testimony is preferable to negative when other conditions are equal, and when reputable men declare that they have found a drug of value in a given condition, the burden of proof concerning its worthlessness then devolves on its opponents.

There can be no doubt that much of the misunderstanding which exists in regard to this drug has arisen through the substitution of other substances for *Cactus grandiflorus*. As an example of this we may cite the experience of Gordon Sharp,[1] who, as the result of clinical observations extending through several years, came to the conclusion that *Cactus grandiflorus* possessed no therapeutic properties whatsoever. Sharp worked with specimens of cactus obtained from a number of the better-known drug houses of Great Britain, but unfortunately, when he submitted a specimen of his *"Cactus grandiflorus"* to the botanist, E. M. Holmes, the latter found it to be *Opuntia decumana*.

Naturally this deprived Sharp's work of its value, so far as the question concerns *Cactus grandiflorus* and Sharp thereupon secured specimens of the true *Cactus grandiflorus* with which he conducted a new series of experiments, coming to the same conclusions[2] that he had reached previously, *i. e.*, that the drug was inert.

Under the circumstances we considered it necessary to exercise especial care to secure absolutely authentic specimens of *Cactus grandiflorus*, and application was made to some of the larger manufacturers of pharmaceuticals and dealers in ground drugs, but they were unable to supply us with authentic specimens.

Dr. J. N. Rose, associate curator of the Division of Plants of the United States National Museum, kindly supplied us with a specimen of the true *Cactus grandiflorus;* but it has been asserted that the Mexican variety alone possesses therapeutic value; hence we desired authentic specimens direct from Mexico. On the suggestion of Dr. Rose we applied to Dr. C. A. Purpus, a botanist at Zacuapan, Huatusco, in the state of Vera Cruz, Mexico, who gathered a sufficient supply of the fresh herb and forwarded it to us.

We have used tinctures made from these two specimens, fluidextracts made by the more prominent manufacturers of pharmaceuticals, as well as the Specific Medicine Cactus, made by Lloyd Brothers, and extracts prepared from these tinctures and fluidextracts. The specimen sent us by Dr. Purpus agrees with the description given by Holmes, and Dr. Purpus is a botanist whose standing cannot be questioned.

EXPERIMENTS

It was our plan originally[3] to supplement our pharmacologic examination of cactus with systematic clinical observations, but we felt constrained to modify our plans for reasons that will become apparent. The tinctures, fluidextracts and extracts were administered to cats, dogs and frogs by the stomach; the tinctures and fluidextracts were administered intravenously to cats and dogs. In some cases small amounts were used, in others the dose was limited only by the tolerance of the animal toward the alcohol contained in the preparation.

1. Practitioner, 1894, lii, 161.
2. Pharm. Jour., Series 4, v, 539.
3. The experiments in which the cactus was administered orally were performed two years ago; the results were so unsatisfactory that the work was discontinued, but our recent work on the standardization of the digitalis bodies by means of the intravenous injection into cats led us to believe that we could determine the cardiac action of cactus with greater precision than had been done hitherto.

The tinctures were prepared by macerating the crushed fresh cactus herb in four times its weight of 95 per cent. alcohol, after the manner by which Dr. Rubini[4] is said to have prepared his tinctures. The fresh herb contains a large amount of mucilage, and when a weakly alcoholic menstruum is used a thick viscid preparation is obtained of about the consistency and appearance of white of egg, except for a greenish color. This is of such viscidity that when a tall cylindrical graduate filled with the fluid is inclined so that a little runs out the entire mass is drawn up over the lip of the graduate, as the pendent end of a rope might draw an entire coil over a pulley. The tinctures prepared with strong alcohol have a handsome green color due to the presence of chlorophyll, but they contain only about 0.5 per cent. of solid extract.

There is a want of agreement among manufacturers of the fluidextract concerning the proper menstruum for exhausting *Cactus grandiflorus,* the percentage of alcohol in these preparations varying from 43 per cent. to 90 per cent. This results in great differences in the appearance and solid contents, and it also indicates that some manufacturers must use the dried herb, since the moisture present in the fresh would reduce the alcoholic content much below that given on the labels in some cases.

We determined the amounts of solid extracts in the tincture and fluidextracts which we used by heating 10 c.c. of each preparation in a porcelain crucible to 80 C. for 24 hours and weighing the residue. Some of these residues are quite dry; others are of the consistency of extracts. The alcoholic and solid contents are given in Table 1.

TABLE 1.—CONTENTS OF FLUIDEXTRACTS

Name of manufacturer.	Alcohol.	Solid extract.
	%	%
Eli Lilly & Co.....	55	4.0
Lloyd Bros. (specific med.).	81	4.0
Mulford & Co.....	80	0.9
Parke, Davis & Co.....	65-75	1.6
Sharpe & Dohme*.....	85	0.7
E. R. Squibb & Sons.....	43	1.8
Frederick Stearns	90	1.0
Wm. R. Warner & Co....	60	1.6
John Wyeth & Bro.....	75	2.4
Tincture (our own)....	80	0.58

* Only 2 c.c. were available for the determination of the solid extract. Since our own tinctures represent about 20 per cent. of the drug, they should contain but one-fifth as much extract as a fluidextract.

The extracts, not those mentioned in Table 1, which were used in our experiments on animals, were prepared by evaporating the tinctures and the fluidextracts, exposed in open dishes on a warm table placed over a radiator, to the consistency of a soft extract and adding sugar of milk. The extracts so prepared represented from one to fifty times their weight of cactus; the amounts used in the experiments are expressed in terms of the crude drug which they represent.

ADMINISTRATION OF CACTUS BY THE STOMACH

Two cats, A and B, received doses of the fluidextract of cactus so adjusted that the alcoholic content was the same in each case. A received 4.7 c.c. of Sharpe & Dohme's fluidextract, and B received 9.4 c.c. of Squibb's, each containing 4 c.c. of absolute alcohol per kg. of weight, through a stomach tube. C was used for a control and received 4 c.c. of absolute alcohol per kg., the three doses being so diluted with water that each contained the same percentage of alcohol.

There was no perceptible difference in the effects of the three doses. All three of the cats sank into a state of profound narcosis, so that they remained motionless in whatever position they were placed. The heart-rate of the cat which received the larger dose of cactus was slowed by 12 beats per minute; that of the one which received the alcohol alone was slowed by 20 beats; that of the one which received the smaller dose of cactus was increased by 9 beats per minute.

In order to test the effects of the continued administration of cactus, 1 c.c. of fluidextract of cactus per kg. of weight was given daily for one week through a stomach-tube to each of three cats. The heart-rate was determined before the drug was used, just after, and twenty-four hours after, the last dose. The results are given in Table 2.

TABLE 2.—HEART-RATE BEFORE AND AFTER CONTINUED ADMINISTRATION OF CACTUS *

		Heart-rate.		
Cat.	Manufacturer.	I	II	III
D	Eli Lilly & Co.....	165	192	150
E	Sharpe & Dohme.....	198	...	168
F	Lloyd Bros. (spec. med.).	183	216	186

* I, before; II, just after; III, twenty-four hours after last dose.

The results of these experiments being unsatisfactory and inconclusive, larger doses were administered in the form of the extracts to seven cats for periods of three days. The results are given in Table 3.

TABLE 3.—HEART-RATE BEFORE AND AFTER LONGER CONTINUED ADMINISTRATION *

		Dose	Heart-rate.	
Cat.	Manufacturer.	gm. per kg.	I	II
G	Sharpe & Dohme.....	17.5	170	162-183
H	Lloyd Bros.....	17.5	126	126
I	Parke, Davis & Co.....	8.0	183	182-198
J	Eli Lilly & Co.....	8.0	150	162
K	John Wyeth & Bro.....	16.0	150	150
L	Our own tincture.....	15.0	180	192
M	Our own tincture.....	14.0	222	237

* I, before; II, after.

Tincture of strophanthus was used as a control in a number of cases. The results with this drug were not wholly satisfactory, but distinct slowing was usually induced by the subcutaneous injection of about one-fourth of the fatal dose, or by the oral administration of large, but not fatal, doses.

In order to test the effect of cactus on the dog after the oral administration, a single large dose was given as follows: Fluidextract of E. R. Squibb & Sons (250 c.c.) was warmed in order to evaporate most of the alcohol, and the residue, which was quite thick and mucilaginous, was diluted with water to measure 350 c.c. This was administered in one dose through a stomach tube to a dog weighing 4.4 kilograms. Emesis occurred in about thirty minutes—a result which cannot be considered extraordinary in view of the fact that the amount given was equal to nearly one-twelfth the weight of the animal.

Four days later the same dog received 150 c.c. of the fluidextract of cactus of Parke, Davis & Co. in the same way, after the alcohol had been removed by evaporation. No perceptible effect followed the administration of this stupendous dose, equal to one thousand times the average therapeutic dose for a man, which is given on the label of the specimen used as 0.12 to 0.3 c.c. This dog received about 15,000 times as much per kilo of weight as a man of 70 kilos would when taking the therapeutic dose just mentioned.

The extracts of cactus were administered to frogs by the mouth in doses corresponding to 100 grams of the drug per kilo of weight, without causing perceptible effects. Such amounts correspond to doses of 7 kilos for a man of 70 kilos in weight, or a great many thousands of times as large as the doses usually recommended.

4. Abstr. in Med. Rec., iii, 299.

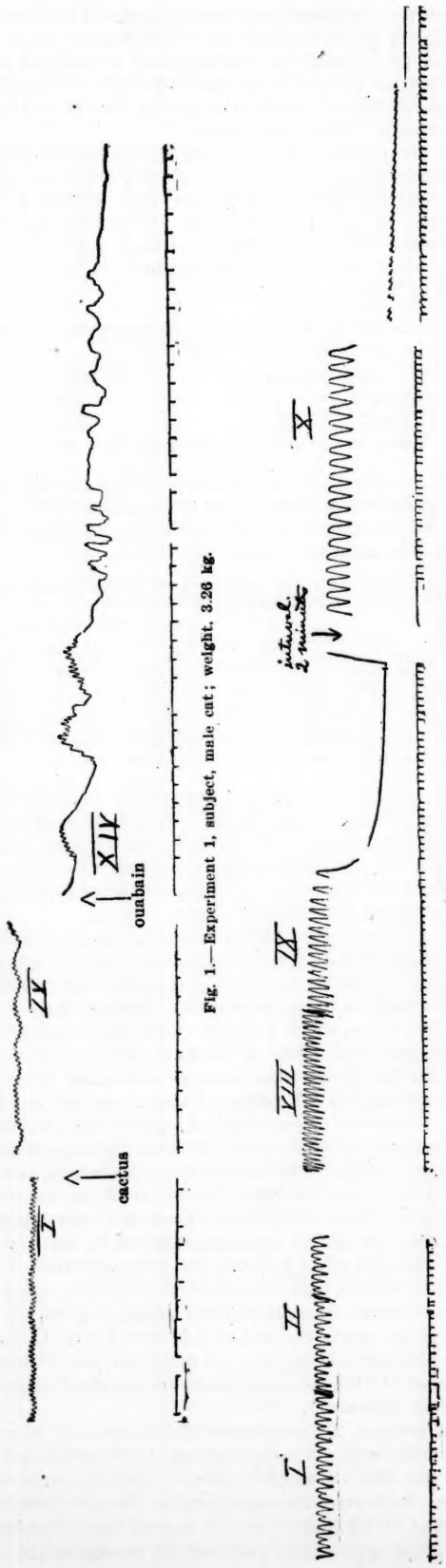

Fig. 1.—Experiment 1, subject, male cat; weight, 3.26 kg.

Fig. 2.—Experiment 2, subject, male dog; weight, 5.4 kg.

INTRAVENOUS ADMINISTRATION

The results of the oral administration of cactus showed that no effect could be expected from its use in that way, but as the rate of absorption of all of the digitalis bodies from the alimentary canal is variable, or at times entirely wanting, we next tried the effects of various amounts by intravenous injection. In some cases small doses were used, in others the amount was limited only by the animal's tolerance for the alcohol contained in the preparations used.

The protocols and parts of the tracings of two experiments are given to show the absence of any action resembling that of digitalis, and for convenience of comparison we give a tracing showing the final stage of the typical digitalis action on the same animal. The tracings cannot be reproduced in full, as each is about a meter in length, but they show nothing characteristic of the action of digitalis, aconite, strychnin or in fact of any drug.

The tracing in Experiment 1 (Fig. 1) shows a slight but steady rise in blood-pressure, with a corresponding slowing of the heart-rate which might be mistaken for a digitalis action; but this results from a gradual recovery following the ether and the operation, together with the action of normal saline with which the cactus was diluted. That the action is not at all characteristic of digitalis will be evident when one observes that the excursions are no greater, there is no increase in the vagus stimulation with increased doses, and the great irregularity so characteristic of the toxic stage of digitalis action is not obtainable with cactus (cf. ouabain tracing).

PROTOCOL OF EXPERIMENT 1

July 30, 1910. Male cat, weight, 3.26 kg.
10:40 a. m. Ether; cannulas into femoral vein and carotid artery.
10:54 a. m. Tracing I, normal.
10:56 a. m. Tincture cactus, 0.1 c.c. per kg. diluted with 9 parts of normal salt solution.
10:58 a. m. Tincture cactus, 0.1 c.c. per kg.
11:00 a. m. Tincture cactus, 0.1 c.c. per kg.
11:02 a. m. Tincture cactus, 0.1 c.c. per kg.
11:04 a. m. Tincture cactus, 0.1 c.c. per kg.
11:06 a. m. Tincture cactus, 0.5 c.c. per kg. (total 1 c.c. per kg.).
11:18 a. m. Tracing IX.
11:19 a. m. Ouabain 1-100,000 injected continuously.
11:30 a. m. Clot forming in cannula.
11:51 a. m. Just fatal dose of ouabain injected.
11:55 a. m. Great irregularity, slowing (Tracing XIV).
11:56 a. m. Animal died. (Total 0.122 mg. ouabain per kg.)

All injections were made into the femoral vein; the blood-pressure in the carotid is recorded, the time-marker showing seconds. Tracings with a Huerthle membrane manometer.

The tracings in Experiment 2 afford an excellent example of the entire absence of any digitalis, aconite or strychnin action, death resulting from respiratory paralysis, due to the combined effects of the ether and alcohol, more than 5 c.c. of alcohol having been injected during the experiment.

The respiration ceased some time before the heart stopped beating. The pause in the heart-beat in this case is not in any way characteristic of the action of digitalis or aconite. It is quite true that pauses in the heart-beat occur in the latter stages of digitalis action, but these are usually of but a few seconds, duration, and when the beat is resumed it is always quite irregular and rapid at some period before death. In this experiment the heart beat slowly but with perfect regularity, except for one other pause, until just before death, some seven minutes after the cessation of respiration, and even the last beats were quite regular except for a progressive weakening.

The action of aconite is also characterized by great irregularity in the toxic stage, and strychnin causes convulsions, or, at least, hyperexcitability, with sudden rise

of blood-pressure. The portions of the tracing given fully represent all that was observed.

We have not seen a case in which death resulted from respiratory failure from a digitalis body alone, though this sometimes occurs when an animal is too deeply anesthetized, just as it does from an anesthetic in the absence of a digitalis action.

PROTOCOL OF EXPERIMENT 2

Aug. 4, 1910. Male dog; weight, 5.4 kg.
10:30 a. m. Morph. sulphate, 0.01 gm., subcutaneously.
11:00 a. m. Ether for light anesthesia; cannulas into the femoral vein and the carotid artery.
11:15 a. m. Ether withdrawn.
12:06 p. m. Normal (Tracing I).
12:07 p. m. Lloyd's specific medicine cactus, 0.1 c.c. per kg., diluted with four parts of normal salt solution.
12:10 p. m. Cactus, 0.2 c.c., as before (Tracing II).
12:17 p. m. Cactus, 0.3 c.c., as before.
12:34 p. m. Cactus, 1 c.c., as before.
12:40-12:58 p. m. Cactus, 2.4 c.c., as before. Clot in cannula (total, 4 c.c.).
1:05-1:18 p. m. Tincture Mex. cactus, 2 c.c. per kg., diluted with normal salt solution.
1:33 p. m. Resumed injection of tincture cactus.
1:34 p. m. Respiration begins to fail; total, 4 c.c. of specific medicine cactus and 2.75 c.c. tincture per kg. (Tracing VIII).
1:35 p. m. Cessation of respiration; total of 5.4 c.c. (Tracing 2). Alcohol per kg. (in cactus preparations).
1:36 p. m. Pause in heart-beat.
1:38 p. m. No respiratory movement (Tracing X).
1:42 p. m. Cessation of pulsations.

Despite these repeated failures to obtain evidence of any pharmacologic action with the preparations of cactus which we had employed, it seemed possible that *Cactus grandiflorus* might contain an active principle in such small amounts that its presence was masked by the alcohol in the liquid preparations, and that it might be injured or destroyed by the slight degree of heat used in the process of evaporating the alcohol from these preparations, though the probability of such being the case seemed to us very slight indeed.

We next resorted to a method which we believe to be capable of detecting even a feeble digitalis action. We have shown[5] that we could estimate the activity of various digitalis bodies by means of the combined use of ouabain and the particular digitalis body to be tested, the results being more accurate in the case of the more slowly acting digitoxin when the combined method is used than when the digitoxin is used alone.

This method may be described very briefly as follows: The fatal dose of crystalline ouabain for the cat by the vein is 0.1 mg. per kg. When less than the fatal dose of a digitalis body has been injected into the vein of a cat, less than 0.1 mg. of ouabain per kg. will be needed subsequently to cause the animal's death in a typical manner, the difference between 0.1 mg. of ouabain per kg. and that actually required being proportional to the activity of the digitalis body previously injected. This may be made clearer by the following illustration: 0.3 mg. of digitoxin per kg. injected intravenously proved fatal to a cat after four days, but 0.15 mg. of digitoxin per kg. and 0.05 mg. of ouabain per kg. (just half of the minimal fatal dose of each) injected into the vein at once caused death in a few minutes.

The accuracy of this method has been tested with a number of digitalis bodies, including digitoxin, digitalis, strophanthus and convallaria, but it is only to be expected that differences in individual susceptibility should be seen occasionally. We believe, however, that the results which we have obtained suffice to preclude serious errors.

It seems fair to conclude from what has just been said that if *Cactus grandiflorus* contains more than the merest traces of a principle having a digitalis action, the presence of such a principle can be detected by the method just described, and we certainly can detect the presence of as little as one-thousandth of 1 per cent. of ouabain when no greater quantities of an unknown solution are used than were used of the cactus.

At first we sought to use doses of cactus which were limited only by the estimated tolerance of the cats for the alcoholic content of the preparations, but we soon found that it was impossible to approximate the minimal fatal dose of alcohol for anesthetized cats, and the animals died at various stages of the experiments. Some survived until the cactus and the full fatal dose of ouabain had been administered; others succumbed when only 0.5 c.c. of the fluidextract of cactus per kilogram of weight had been injected. Such cases as the latter were so evidently due to the alcohol and ether that they had to be thrown out of the reckoning, and under the circumstances it was deemed better to throw out the entire series including those which supported the final results; hence these earlier experiments are not included in the table.

Such accidents were avoided when the dose of the fluidextract of cactus was reduced and the precaution was taken of letting the animals partially come out of the narcosis. As a further precaution the fluidextracts and tinctures were diluted with normal salt solution and injected very slowly. In the series tabulated we injected the fluidextracts and tinctures into the femoral veins of cats in doses of 1 c.c. per kilogram in eight cases, 1.5 c.c. per kilo in four, and of 5 c.c. in one case, that of the fluidextract having the lowest alcoholic content (43 per cent.) and then determined the amount of crystalline ouabain which was required to cause the death of the cat with typical symptoms.

TABLE 4.—COMPARISON OF EFFECTS OF CACTUS AND OUABAIN

Cat.	Manufacturer.	Dose of cactus in c.c. per kg.	Per cent. of fatal dose of ouabain required.	Per cent. of fatal dose due to cactus.
N	Ely Lilly & Co.....	1	100	00
O	John Wyeth & Bros....	1	195*	00
P	E. R. Squibb & Sons...	1	100	00
Q	E. R. Squibb & Sons...	1	106	00
R	Sharpe & Dohme.....	1	80	20
S	Sharpe & Dohme.....	1	104	00
T	Parke, Davis & Co.....	1	110	00
U	Lloyd Bros. (spec.)....	1	154	00
V	Lloyd Bros. (spec.)....	1.5	103	00
W	Tincture (our own)....	1	122	00
X	Tincture (our own)....	1.5	77	23
Y	Tincture (our own)....	1.5	115	00
Z	Warner's, Mulford's and Stearn's, mixed	1.5	97	3
A1	E. R. Squibb & Sons...	5	117	00

* Cat tolerant.

There is an apparent cactus action in the case of cats R, X and Z amounting to 20, 23 and 3 per cent. of the fatal doses respectively. We say apparent, for we believe these results can be explained otherwise than on the basis of the cactus activity. In the first place, the controls in two of the more important instances give no evidence whatsoever of cactus action, and the third is wholly within the limits of error. Even granting for the sake of argument that the activity is that indicated, it is very feeble. If we represent the activity of cactus as indicated in the case of R and that of ouabain by parallel lines the lengths of which are proportional to their activities, with that representing cactus one *inch* in length, that representing ouabain would have to be more than three-fourths of a *mile* in length. If we compare the doses on the basis of this indicated activity the oral dose of this fluidextract of cactus would be about 250 c.c., or half a pint.

5. Hatcher and Brody: Am. Jour. Pharm., 1910, lxxxii, 360.

We believe that it would be quite justifiable to attribute these discrepancies to undetermined and unimportant causes, but we were particularly anxious to leave nothing to deduction which could be proved experimentally; hence we made a new series of experiments in which we injected 5 c.c. of fluidextract per kilogram of weight, after evaporating a portion of the alcohol in a jet of cold air, the temperature of the preparations being kept quite low. The results of these experiments are given in Table 5.

TABLE 5.—FURTHER COMPARISON OF CACTUS AND OUABAIN

Cat.	Manufacturer.	Dose of cactus in c.c. per kg.	Per cent. of fatal dose of ouabain required.	Per cent. of fatal dose due to cactus.
A1	Parke, Davis & Co.....	5	86	14
C1	Parke, Davis & Co.....	5	94	6
D1	Warner & Co.....	5	88	12
E1	Warner & Co.....	5	89	11
F1	Wyeth & Bro.....	5	101	00

The results given in Table 5 require further comment. In one case there was no apparent effect even from such a colossal dose; cat C 1 was very fat, and we have frequently stated in other papers that such animals require smaller doses than the normal. This leaves three cases to be explained, as the differences are too high to be attributed to the limits of error, and furthermore, they are all in one direction. Another effort was made to determine the nature of this feeble action.

Reference to Tables 4 and 5 shows that in a few exceptions where cactus has an apparent action the fluidextract of Warner & Co. was used in three cases out of a total of seven, and we decided to make one more effort to determine whether this preparation really possessed a true digitalis action, however feeble, or some other toxic action which lessens the amount of ouabain required. Such actions are seen occasionally with such drugs as acetanilid, but they lack the uniformity of action possessed by the true digitalis bodies. Before discussing the final experiment we will take up the results given in Table 5 in some detail.

Every one who has worked with animals in the standardization of drugs knows that the use of enormous doses introduces disturbing factors which cannot be explained readily in some instances. In the present case we desired to inject the whole of the fluidextracts intravenously, but when the menstruum was altered by evaporation the preparations became muddy in appearance, and not altogether fit for intravenous use, but the addition of sufficient alcohol to make them clear would have defeated the purpose of the evaporation; hence these were used containing variable amounts of alcohol and insoluble matter in suspension. While these could have no protective effect against digitalis actions they might easily disturb the experiments.

Even though we grant the utmost that the most biased could demand the activity of the fluidextracts is absolutely negligible, since 5 c.c. of these correspond to about one-hundredth of a milligram of ouabain, or, to put it somewhat differently, the oral dose of such fluidextracts corresponding to 5 milligrams of ouabain would be 2,500 c.c., or more than half a gallon. The improbability of there being an active principle present in *Cactus grandiflorus* is very great. If it were no more active than impure digitalin, the least active constituent of digitalis, there could not be more than one part present in 15,000 parts of cactus to account for this supposed activity, but we are not acquainted with principles present in such infinitesimal amounts, and on the other hand should the cactus contain as much as 1 per cent. of an active principle then it must be of such slight potency that the ordinary therapeutic dose would have to be about 25 grams, or one ounce.

Our final effort to detect even traces of a digitalis action was made in the following way: Fifty c.c. of Warner's fluidextract (mentioned above) was evaporated in a jet of cold air to a volume of 20 c.c. The precipitate consisted mainly of chlorophyll. The residue was filtered, the filter washed, the filtrate and washings mixed and water and salt added so that the mixture measured 42 c.c., and had the concentration of normal salt solution.

The whole of this solution was injected slowly into the femoral vein of a cat weighing 1.68 kg.; the dose, corresponding to 30 c.c. of the fluidextract per kilogram of weight, caused no perceptible effect, and ouabain was then injected very slowly, and with frequent interruptions, until the animal died. This experiment was conducted with the utmost care to avoid the injection of any excess of ouabain over the minimal amount required to cause death. The result was striking and entirely failed to show a trace of digitalis (or any other) action on the part of the cactus. The cat required just 0.107 mg. ouabain per kg., or 107 per cent. of the normally fatal dose, a result wholly within the limits of error.

We are firmly convinced as the results of these experiments that there is no possible way of demonstrating that *Cactus grandiflorus* possesses any cardiac action in the slightest degree.

The fluidextracts of *Cactus grandiflorus* of different manufacturers were administered to three patients for periods of one week, and to two others for shorter periods, but there was no perceptible effect and their use was discontinued.

DISCUSSION

The literature concerning *Cactus grandiflorus*—and in this connection it is to be understood that reference is not made to the pseudo-literature of any secret or semi-secret preparation—is not very extensive, and would well repay perusal by those who use this drug clinically. A report to the Council on Pharmacy and Chemistry[6] summarizes the essential facts in the literature relating to cactus, but a careful analysis of the subject requires that certain papers shall be discussed in some detail.

Cactus grandiflorus was introduced into medical practice mainly through the recommendation of Dr. Rubini,[7] a homeopathic physician of Naples, about forty-five years ago. He used very small doses of a 25 per cent. tincture made by macerating the crushed drug in 95 per cent. alcohol. A. F. Pattee[8] recommended it for functional palpitation in doses of from one to five drops of a 25 per cent. tincture, but he gives little evidence of its value to support his recommendation. N. S. Davis[9] reported the use of cactus in two cases of palpitation with *apparent* benefit. It is to be noted particularly that Davis did not assert that cactus had any actual value; he merely used it in these two cases and said that the patients were benefited apparently. Naturally, no conclusions could be drawn from the casual observation of two cases, and he did not attempt to draw conclusions.

A number of papers appeared in the *Therapeutic Gazette* in the next few years in which cactus is extolled highly, but these papers are not wholly convincing.

6. THE JOURNAL A. M. A., March 12, 1910, p. 888.
7. See abstr. Med. Rec., iii, 299; and King's American Dispensatory, ed. 18, revision 3, p. 374.
8. Boston Med. and Surg. Jour., 1867, lxxi, 537.
9. Philadelphia Med. Times, 1879, x, 26.

Engstad[10] cites an instance of "lingering typhoid pneumonia" with the heart becoming feeble after the second week, in which cactus stimulated the heart immediately, after digitalis and strychnin had failed. Engstad mentions the fact that most preparations are inert, but that Parke, Davis & Co. and Merck make excellent preparations.

Hills[11] states that cactus acts especially on the circular fibers of the heart and arteries, causing irritability, hyperesthesia, neuralgia, spasm and palpitation. He says that cactus resembles digitalis in respect to its power of producing heart-failure, and that this is due to the secondary effect in the case of both. He states that cactus resembles aconite in the effect on the heart much more than it does digitalis. Hills gives no evidence to sustain his statement regarding the highly selective action of cactus for the "circular fibers of the heart and arteries." It would be interesting in the light of our own experiments to know just what preparation Hills used.

Among those who report clinical studies of cactus is R. W. Wilcox,[12] who used it in 23 cases of cardiac disease. The following statement made by Wilcox is of interest in this place: "The particular preparation that I have employed, because after experimentation it is the only one that I have found to give uniform results, is the fluidextract of Parke, Davis & Co. in dose of ten to thirty minims." It would be interesting to have the protocols of the observations in which other preparations were used without satisfactory results, but this information is not given in the article.

Williams[13] reports the use of cactus in the treatment of nearly 200 cases of cardiac disease during some years, but he refers to certain physiologic experiments as explaining his results, but those experiments were not made with *Cactus grandiflorus,* and if his results accord with those experiments we must suppose that he too, like Gordon Sharp, failed to secure the true *Cactus grandiflorus,* and that Williams worked with some species of cactus having a strychnin action.

Sayre found that cactus supplied by J. U. Lloyd produced little or no effect on frogs, and he sent a specimen of the tincture to E. M. Houghton who found that very large doses produced no perceptible effect when used intravenously on dogs. They reported[14] that the drug is worthless as a substitute for digitalis.

When one attempts to explain why cactus—and under this term we include its preparations and derivatives, proprietary and non-proprietary—attained some degree of popularity in the treatment of cardiac diseases he is confronted with certain difficulties, for the explanation involves a consideration of conditions which are known to exist, but for which sufficient evidence is lacking in individual cases. In the first place it is well known, but often forgotten by enthusiasts, that patients usually tend to recover regardless of the disease or the drugs used in its treatment. Enthusiasts of all ages are too prone to attribute the benefit observed to the latest drug used; and this appears to be true especially in cardiac disease, in which rest in bed and the substitution of a proper diet will often accomplish more than any drug or combination of drugs. Hence an inert substance may attain a certain vogue.

In the second place, when a new vegetable drug is put on the market, a financial harvest awaits the pharmaceutical manufacturer who is alert to convince practitioners that his preparation of that drug is superior to other makes and that the substitution of spurious drugs is common. This may be accomplished in various ways. We are all more or less familiar with the so-called "house-organs" and with the testimonials of men whose affiliations tend to make them unduly optimistic when the preparations of certain firms are under consideration.

Having attained popularity, the continued use of cactus or its preparations calls for a somewhat different explanation. Disappointment, following the use of the digitalis bodies, undoubtedly leads many physicians to seek harmless substitutes for the better-known and more potent drug, and when one happens to see improvement follow the use of cactus after some particularly unfortunate experience with digitalis, one is apt to incline to the continued use of the more harmless or, rather, the inert drug, unless his facilities for clinical study are above the average.

There can be no gainsaying the fact that the mastery of digitalis therapy presents many difficulties; that many physicians have failed to accomplish this mastery, and that disappointment proportionate to the lack of that mastery will almost inevitably follow its use, for it is like a two-edged sword, as potent for harm as for good.

And thus we find that the reason for the use of cactus often lies in ignorance of the resources at our command, and this accentuates the need for the more careful study of the actions of the true digitalis bodies in cardiac disease, for it is certain that the physician who depends on cactus or any derivative or preparation of it, deprives himself deliberately of his medical armamentarium in the treatment of conditions which imperatively demand all the resources at his command. Pathology has added much to our exact knowledge, but we gain little thereby if we waste it through the use of inert or little known drugs.

So much for the actual conditions; the arguments with which the users of cactus attempt to justify their position require consideration. These arguments suggest the position of the bats when the birds and the beasts were at war. When evidence is furnished that cactus has no digitalis action, the fact is admitted usually, and they advance claims which are decidedly vague, and it is significant that it now finds its warmest supporters among those who recommend it in the treatment of the so-called functional disorders of the heart, or precisely those conditions which are known to require no medication or treatment of any sort beyond abstaining from the habits which induce the disturbance.[15]

While thus disclaiming that cactus has any digitalis action, the adherents do not hesitate to quote those who have used it in precisely those conditions for which digitalis is known to be useful, and who have declared it to be superior to digitalis. As examples of this we may cite the following authorities who are nearly always quoted when cactus therapy is being upheld by references to the literature.

Ellingwood[16] states that cactus is in every way superior to digitalis; that cactus exerts a direct action on the cardiac plexuses, regulating functional activity, improves the nutrition of the heart (by what means is not stated); that it increases the contractile power and energy of the

10. Therap. Gaz., 1890, new series, vi, 606.
11. N. Y. Homeopathic Med. Times, 1891, xviii, 295.
12. Post-Graduate, 1891, vii, 85.
13. Practitioner, 1891, xlvii, 266.
14. Therap. Gaz., 3 ser., 1906, xxii, 812.

15. After this was written one of us observed an arrhythmia due to the use of caffein. It was considered a good opportunity to try cactus, but when the heart was examined 12 hours later the arrhythmia had disappeared spontaneously before the cactus could be obtained.
16. Med. Rec., 1905, lxvii, 857.

heart through the cardiac ganglia and accelerator nerves, increases the musculomotor energy, and elevates arterial tension; that it increases the height and force of the pulse wave, often acts more quickly than strychnin or digitalis, and is a true sedative when the pulse is rapid and feeble and the heart weak.

We are not aware how these conclusions were deduced, but they appear to be based on clinical observations alone and are unsupported by any instrumental evidence.

Wilcox[12] used cactus in mitral and aortic stenosis and regurgitation. Aulde[17] states that cactus is distinctly a cardiac tonic, free from the so-called cumulative action of digitalis. He states that cactus proved useful in dilatation with hypertrophy accompanied by a murmur. Gregory[18] endorses all that Aulde says. Herwisch[19] used cactus in cases of valvular diseases of the heart with good results when digitalis, strychnin and strophanthus did not improve the condition of the patient.

It would be well for those who use cactus while admitting that it has no digitalis action to cite other authorities than those just mentioned in support of their positions. But it would be a little unfair perhaps to judge severely many who quote the literature, as the perpetuation of certain small blunders suggests that the original literature of cactus is not consulted usually, and it seems probable that some of those who have been guilty of this inconsistency are not aware of the fact.

CONCLUSIONS

We have been unable to obtain any evidence that the true Mexican *Cactus grandiflorus* possesses any pharmacologic action whatever, but on the contrary, it appears to be a singularly inert substance when administered either by the mouth or by the vein.

When colossal doses of *Cactus grandiflorus* are given by the vein they sometimes—but not always—appear to exert an extremely feeble action on the heart; but this action is so slight that its nature could not be determined.

Even the most colossal doses of *Cactus grandiflorus* administered by the mouth to cats, dogs and frogs exert no perceptible effect.

If we are correct in maintaining that *Cactus grandiflorus* is inert it hardly requires further proof that any substance extracted from the drug must be inert also.

We wish to acknowledge our indebtedness to those who have assisted us in procuring authentic specimens of *Cactus grandiflorus* and to Mr. Maurice I. Smith for assistance in carrying out many of the experiments.

414 East Twenty-Sixth Street—122 East Thirty-Fourth Street.

Multilocular Cystic Hygroma of Neck.—In a healthy child, aged 4, who had had no children's diseases, a small, soft swelling was noticed in the angle between the left clavicle and the anterior border of the trapezius two weeks after birth. This had grown progressively in an upward and forward direction, more rapidly sometimes than at others. It had seemed to swell up at times and then decrease in size again. The last few months it had grown much more rapidly. There was no pain or dyspnea. A fortnight ago the portion beneath the lower jaw became painful and tender, with a rise of temperature to 100 F. The temperature subsided in a week, leaving this portion of the swelling hard.—Charles P. Childe, *Proc. Roy. Soc. Med.*, July, 1910.

17. Therap. Gaz., 1891, new series, vii, 315.
18. Therap. Gaz., 1891, new series, vii, 426.
19. Philadelphia Polyclinic, 1894, iii, 444.

ARTIFICIAL STIMULATION AND INHIBITION OF THE GROWTH OF NORMAL AND SARCOMATOUS TISSUES

A FOURTH ARTICLE ON CULTIVATION OF TISSUE IN VITRO *

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AND
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We have studied by the method of cultivation of tissues *in vitro*, the properties acquired by the plasma during the development of an experimental malignant tumor. The experiments were performed on chickens of thoroughbred stock, obtained from the same farm, inoculated with the sarcoma propagated by Dr. Peyton Rous. Fragments of this tumor and of normal tissues of chick embryos and adult individuals were cultivated comparatively in the plasma obtained from normal animals and in the plasmas obtained from sarcomatous chickens at different stages of the disease. Sharp differences in the rate and in the dimensions of the growth could easily be observed, even without the use of the microscope.

INFLUENCE OF NORMAL AND SARCOMATOUS PLASMAS ON THE GROWTH OF SARCOMATOUS TISSUES

Sarcoma cultivated in the plasma of the individual bearing the tumor grew very extensively. The area covered by the new cells in twenty-four hours was often fifteen or twenty times larger than the area of the primitive fragment. When the same sarcoma was cultivated in the plasma of a normal animal its growth was active although less extensive than in the plasma of the same individual. The same sarcoma cultivated in the plasma of another sarcomatous animal grew very little or even did not grow at all. If the plasma was taken from an animal recently inoculated and bearing a small tumor, it inhibited slightly only the growth of the tumor, but if it belonged to an animal bearing a very large and actively growing tumor it prevented completely the development of the cultures. Therefore the *plasma of a sarcomatous animal acquires the property of inhibiting the growth of a sarcoma taken from another animal.*

What causes the inhibition? Is it due to substances secreted by the tumor or to substances produced by the organism as a reaction against the tumor? If the inhibition is caused by substances secreted by the tumor and contained in the blood of the sarcomatous animal it might be possible to give that inhibiting power artificially to normal plasma by adding to it serous extract of sarcoma. Therefore we added a little sarcomatous extract to cultures of sarcoma in normal and in sarcomatous plasmas. The growth of sarcoma in normal plasma with sarcomatous extract was markedly accelerated. It showed, evidently, that the inhibiting power of sarcomatous plasma was not due to substances secreted by the tumor. Then it is, possibly, caused by substances produced by the organism as a reaction against the tumor. It is important to consider that the inhibiting power of the sarcomatous plasma is felt only by a tumor belonging to another animal, that is, by a homogenic tumor. The tumor belonging to the animal which has given the plasma, that is, the autogenic tumor, is not affected by the inhibiting substances. If a tumor could be sensitized to the action of the inhibiting substances

* From the Laboratories of the Rockefeller Institute for Medical Research.

existing in the plasma of the organism on which it grows, its development in the same plasma would probably be prevented.

INFLUENCE OF NORMAL AND SARCOMATOUS PLASMAS ON THE GROWTH OF NORMAL TISSUES OF NORMAL AND SARCOMATOUS ANIMALS

The comparative action of normal and sarcomatous plasmas was studied on normal spleen of sarcomatous animals, on normal spleen of normal adult animals, and on spleen, cornea, cartilage and skin of embryo chicks, eight and fifteen days old.

The plasmatic medium was taken from normal adult animals and from animals bearing small and recent tumors, or old and extensive tumors.

Fragments of spleen extirpated from a normal animal grew sometimes at the same rate in normal and sarcomatous plasmas, but it happened also very often that they grew more quickly and more extensively in sarcomatous plasma.

Fragments of spleen extirpated from a sarcomatous animal grew almost always much more quickly and extensively in sarcomatous plasma than in normal plasma.

It was also observed that spleen taken from chick embryos grew very much better in sarcomatous than in normal plasma. Embryonic connective tissue also showed a larger development in sarcomatous plasma.

The activation of growth produced by the sarcomatous plasma is affected in a large measure by the size and the age of the tumor of the animal which gave the plasma. Plasma from an animal with a large and old tumor is more stimulating for normal tissues than the plasma from an animal with a small and recent tumor.

What causes the stimulating action of sarcomatous plasmas on normal tissues, and especially on spleen?

It may be substances secreted by the tumor and diverted into the blood. In some experiments the growth of normal tissues cultivated together with fragments of tumor in normal plasma was noted to be accelerated. The results were not constant but showed that sarcoma may stimulate the growth of a tissue under certain ill-determined conditions. Therefore we attempted to modify the action of normal plasma by adding to it a little serous extract of sarcoma. Several series of experiments of that kind were performed. Normal spleen was cultivated in normal and sarcomatous plasma. In one of the series a little sarcomatous extract was added to normal and sarcomatous plasma. In the series in which no extract was added spleen grew very much better in sarcomatous than in normal plasma. On the contrary, in the series in which extract was added spleen grew more quickly and more extensively in normal plasma. It showed that normal plasma had become stimulating by mere addition of a little sarcomatous extract. The same experiments were repeated with embryonal spleen. Embryonal spleen was exceedingly sensitive to the action of the extract. We observed a very marked and sometimes an enormous acceleration of the growth. In one case, the area covered in twenty-seven hours by the new cells was almost forty times larger than the area of the primitive fragment. In a few days the primitive fragment resolved itself into cells and disappeared almost completely. Therefore, the stimulating influence for normal spleen acquired by the sarcomatous plasma may be due to a substance produced by the tumor and analogous possibly to the serous extract of sarcoma.

Is the stimulating substance specific to sarcoma, or is it contained in all actively growing tissues of connective and other types? We had already observed that the growth of cartilage can be stimulated by a fragment of quickly growing spleen, and that a new culture of spleen is activated by addition of a little piece of spleen in full growth. Nevertheless, fragments of spleen cultivated in plasma with tumor and embryonal extract, showed that tumor extract has a very much more energetic stimulating power than embryonal tissues extract.

These biologic characteristics of sarcoma have been studied only on the tumor of Dr. Rous. It will be important to ascertain whether they apply only to this sarcoma or if they express a more general law of development of experimental malignant tumors.

Sixty-Sixth Street and Avenue A.

GROWTH IN VITRO OF THE TRANSPLANTABLE SARCOMAS OF RATS AND MICE *

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NEW YORK

Carrel and Burrows[1] have recently shown that, through the substitution of blood plasma for lymph, Harrison's method of growing *in vitro* the tissues of the frog embryo may be extended to mammalian tissues, human and fowl sarcomas. A brief description of their technic as applied to chick embryos has just appeared.[2] This procedure opens such a splendid field for experimental cancer investigation that its application to the transplantable rat and mouse tumors seems highly desirable. The size of rats and mice offers a difficulty, since the insertion of a cannula into any of the easily exposed vessels of young rats of the size best suited to tumor inoculation is rather tedious, and this difficulty is obviously greater in mice. Moreover, it appeared to us that the injury to the vessel lining through the use of a cannula would cause as much contamination with tissue juices (activator) as a simpler and easier method that we shall describe.

METHOD

The carotid artery is exposed by careful dissection for its entire length in the neck and after ligating above and clamping below with light serrefine forceps of easy grasp, is nicked with sharp-pointed scissors. The flap so made is caught with delicate forceps and the artery severed. The end of the vessel and the supporting forceps are covered with olive oil, the clamp released and the blood allowed to spurt into paraffined glass tubes of small caliber. The first drop or two of blood should not be used. In young 60 gm. rats approximately 1 c.c. of blood may be taken without causing the death of the animal. This yields a little less than 0.5 c.c. of plasma, a quantity sufficient for fifteen to twenty preparations. Twice as much plasma can be secured by bleeding the animal to death, but in many instances, as for example, in immunity studies, this may not be desirable. We have found that plasma obtained in this way remains fluid for at least a half hour and can probably be kept

* From the Department of Pathology, College of Physicians and Surgeons, Columbia University (The George Crocker Cancer Research Fund).

1. Carrel, Alexis, and Burrows, Montrose T.: Cultivation of Adult Tissues and Organs Outside the Body, THE JOURNAL A. M. A., Oct. 15, 1910, p. 1379; Cultivation of Sarcoma Outside of the Body, THE JOURNAL A. M. A., Oct. 29, 1910, p. 1554.
2. Burrows, Montrose T.: The Cultivation of Tissues of the Chick Embryo Outside the Body. THE JOURNAL A. M. A., Dec. 10, 1910, p. 2057.

much longer if a low temperature is maintained. The remainder of the technic is the same as that described by Burrows, except that the tissues were teased at room temperature instead of body temperature.

We have grown *in vitro* a spindle-cell rat sarcoma and a mixed-cell mouse sarcoma, both from Ehrlich's laboratory. The rat sarcoma on transplantation gives 80 to 90 per cent. of "takes" in young animals and pursues a rapid course. In cultures we obtained growths in 70 to 90 per cent. of the preparations. Plasma from normal young rats seems to afford as good culture medium as that from the tumor-bearing animals. Routine examinations were made eighteen hours after "inoculation." At this time a certain percentage show a luxuriant growth far into the media, similar to that described by Carrel and Burrows for the Rous fowl sarcoma. Others show offshoots at various points extending several cell lengths, giving the specimen a prickly appearance. The type of cell varies with the rapidity of growth and age of the culture. In the early sprouting type of growth, the cells are long, spindle-shaped and finely granular. In later stages the cells become coarsely granular. These granules are brilliantly stained by Sudan III and Scharlach R. Where the growth has been very luxuriant the cells are irregular in shape, triangular, spindle-shaped or rounded, with long processes at one or several points. In some specimens growth does not begin until thirty-six or forty-eight hours. The cell type in these latent growths is distinctly different from that in the early wildly growing specimens and suggests that we may be dealing with a proliferation of connective tissue (stroma). Further study will be necessary to settle this point. We have not determined the final limit of growth but have noted that growth may continue for at least four days. Sections of the preparations show that most of the cells of the original piece of tissue remain alive. Mitoses are frequent.

The mouse sarcoma employed gives about 90 per cent. of "takes" when transplanted, grows rapidly and usually kills the host in four to six weeks. It may also be successfully transplanted into rats, in which for the first ten days it grows as well or better than in mice, afterwards undergoing rapid retrogression. This phenomenon suggested the use of rat plasma as a culture medium, since, apart from the value of determining the possibility of growing mouse sarcoma in rat plasma, the larger quantity of plasma obtainable facilitates the technic. Results were positive in a majority of the preparations. The growth in some was even more luxuriant than in the case of the rat sarcoma.

This preliminary study, then, indicates that cultural methods may be easily adapted to the experimental investigation of the transplantable rat and mouse tumors.

437 West Fifty-Ninth Street.

A CASE OF GANGRENE OF APPENDIX AND OMENTUM

OPERATION AND RECOVERY

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History.—The patient, R. R. A., O. S., was admitted to the hospital at 11 a. m., Dec. 10, 1909. Patient had reported at sickcall on morning of December 8, complaining of pain over entire abdomen, and diarrhea. On December 9, pain became localized in right iliac region. Temperature 99.5 F., pulse 82, respiration 18. On the evening of the 9th, temperature was 101 F., pulse 84, respiration 24; tenderness over right iliac region.

Examination.—On admission to the hospital the temperature was 101 F., pulse 120 and respiration 22, with pain and tenderness over appendix and rigidity of right rectus muscle. The patient was prepared for operation, which was performed at 2 p. m. Just prior to the operation the temperature was 101.4 F., pulse 122, and respiration 22.

Operation.—Under general anesthesia (ether) and with the usual aseptic and antiseptic precautions, an incision was made over McBurney's point, through the abdominal wall and into the abdominal cavity. The peritoneum was found much thickened from recent inflammation. The appendix was bound down by adhesions and its distal end was wrapped up in, and surrounded by, a dense mass of inflamed and gangrenous omentum. The last 1½ inches of the appendix were gangrenous, and it had ruptured about half an inch from the tip. Adhesions were broken down and the appendix was amputated, stump cauterized and invaginated into the cecum by a purse-string suture. The inflamed and gangrenous omentum (3 by 6 by 1½ inches) was ligated and amputated. The appendix was 5½ inches long, 1½ inches in circumference at its base and 2 inches in circumference near its tip. After removing the appendix and omentum, the abdominal cavity was flushed out with hot normal salt solution and the wound in the abdomen closed for two-thirds of its extent (peritoneum with fine catgut; muscles with chromicized gut; and skin with silkworm gut), and a drainage-tube inserted into the open one-third and dressings and a bandage applied over all.

Subsequent Course.—Patient was returned to bed in fairly good condition. At 7 p. m. his temperature was 100 F., pulse 120, and respiration 20, and he was given 1,500 c.c. of normal salt solution by proctoclysis; complained of some pain and tympanites. The patient was given a liquid diet and salol internally and did well, the wound closing slowly from the bottom, and the discharge lessening daily until January 10, when it was entirely healed and the entire gastro-intestinal tract in excellent condition and working normally. He has continued in excellent health since his recovery from operation.

This case shows what a serious condition of affairs may exist in the abdomen before any symptoms are observed; and even when symptoms do make their appearance, they are by no means indicative of the severity of the condition causing them. The symptoms in this case would not have led one to think that such a wide-spread gangrenous condition was present in the abdomen.

UMBILICAL HERNIA—AN UNUSUAL CASE

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NEW YORK

Umbilical hernia in itself is, of course, not at all uncommon, but the symptoms in this case were so peculiarly veiled that a brief summary may be of interest.

History.—Mr. X., aged 50, weight 160 pounds, had had the ordinary children's diseases with no complications; always enjoyed good health; no history of abdominal trouble of any kind. Three weeks prior to the first time I saw him, following a violent attack of sneezing (unrestrained), he suddenly had a sensation as if something had given away in his abdomen, and in a short time he was seized with an acute lancinating pain, centralized two inches to the right and one inch below the umbilicus. Generally it was of a grumbling character, giving the patient constant unrest. The duration was from a few hours to three days and was not influenced by standing, exercise, lying on the back or side or sitting. The patient would sometimes be awakened out of a sound sleep by the agonizing pain. It caused no gastric or intestinal disturbance. The general health, appetite, and so forth, were excellent. Rheumatic treatment, opiates and various applications (heat and cold, salves, lotions, etc.) were used to no avail by various physicians.

Examination.—The patient was a man in the prime of life, of good color, etc., but with a worried expression. No adventitious signs of any nature were noted until I came to a more intimate abdominal examination. The abdomen was rounded, with a tendency toward a slight protuberance; the navel was deep and no impulse seen on coughing suggestive of a hernia of any kind; no rigidity or spasm of abdominal muscles and no sign of tenderness on pressure even over the point (above mentioned) where he said that his pain was localized. There was no tenderness over McBurney's point, even with the psoas put on the stretch (Weir's method). On inserting the tip of the little finger into the umbilicus and getting the patient to cough, I noted a distinct impulse. This impulse was in the lower right quadrant and I could make out a loss of substance of the ring, wedge-shaped with the base of the wedge directed outward. Over this edge, on pressure, the patient complained of pain which was sufficiently acute to make him wince.

Treatment.—A proper abdominal truss with plate attachment was ordered and all discomfort subsided and has not returned after some months' duration, except when temporary removal of truss caused a return of the previous symptoms. The patient is still wearing the truss.

CONCLUSIONS

A portion of the great omentum must have been forced into this wedge-shaped space and either by pressure on its raw edge or a squeezing of the peritoneal lining, involved a nerve filament and thus referred the pain, not at the site of the trouble, but downward to the point the patient elected.

171 West Ninety-fifth Street.

TRANSFUSION OF BLOOD BY A NEW METHOD, ALLOWING ACCURATE MEASUREMENT

PRELIMINARY REPORT *

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During the past year, we have had occasion to perform, in conjunction with some experimental work, a considerable number of transfusions on dogs, the result of which will be reported at a later date. One of us, together with Dr. Louis Pollock of the Dunning Infirmary, has also transfused thirteen human patients afflicted with pellagra. In all of these cases, with one exception, the artery-to-vein method of Crile was employed. In one instance vein-to-vein anastomosis was performed.

From study of the literature, as well as personal experiences, we have obtained certain impressions of the most approved methods of transfusion now in vogue, which we would summarize as follows:

1. The operation requires delicate technic, such as is possessed only by those who have had extensive experience in blood-vessel surgery.
2. Considerable time is consumed in performing anastomosis of the vessels.
3. The rate of flow and the amount of blood transfused are not measurable.
4. The flow of blood sometimes ceases before the desired amount has been transfused, even though the operative technic is excellent.
5. Movement of either donor or recipient may tear the vessels apart at their point of union, in spite of the watchfulness on the part of the operators.
6. In infectious patients there is always danger of transfer of infection from the recipient to the donor. This is most liable to occur through the rubbing of the raw surfaces which are held or bound together during the entire procedure.

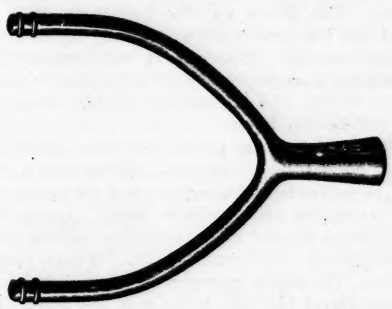
We believe that the method which we now employ overcomes most of these difficulties. Thus far it has proven entirely satisfactory.

The studies of Freund and Bordet and Gengou[1] have demonstrated that blood introduced into vessels coated with paraffin petrolatum remains uncoagulated for several hours. Practical use of this fact has been made in the development of our method.

The following instruments are required:

The usual instruments for exposure of vessels and suture of wounds; three mosquito forceps; two vessel clamps; one 100 c.c. Porges ground-glass syringe; and one especially constructed ground-glass or metal Y cannula.

The cannula consists of a neck and two arms (see illustration). The tips are 2 to 3 mm. in diameter and are provided with slightly raised collars to guard against slipping of ligatures. The neck of the cannula has a conical lumen which forms a firm smooth union with the end of the Porges syringe, which is inserted into its base. (Any other carefully constructed ground-glass syringe serves the purpose equally well.)



The syringe and cannula are sterilized by the dry method, fitted together under aseptic technic and uniformly warmed over a flame. About 25 c.c. of sterile hot petroleum is then aspirated into the apparatus, and, after the latter is thoroughly and rapidly coated by working the piston up and down, the excess is forcibly ejected through the ends of the cannula.

The median basilic or other prominent vein of the elbow region is now exposed in both donor and recipient for a distance of 2 to 3 inches. The vein of the recipient is ligated at the end toward the hand, stripped of blood toward the heart and a rubber-protected vessel-clamp applied as far as possible away from the ligature. A clamp is then applied to the distal end of the donor's vein, the vessel is stripped toward the heart and ligated proximally. Each vessel is in turn cut squarely across near its ligature, caught up at three equidistant points by mosquito forceps and irrigated with warm salt solution. A cannula end is introduced into each vein and tied in position so that one cannula is continuous with the recipient's vein and the other with the vein of the donor. The clamp on the donor's vein is released and a syringeful of blood is carefully aspirated. The clamp is then replaced and the one on the recipient's vein removed. The blood is very slowly injected into the recipient and the clamp reapplied. This procedure is then repeated until sufficient blood has been transfused.

* From the Memorial Institute for Infectious Diseases. This work was aided by a grant from the Fenger Memorial Fund.

1. Ann. de l'Inst. Pasteur, 1903, p. 822.

REPORT OF EXPERIMENTS

EXPERIMENT 1.—Large dog. A medium-sized saline transfusion cannula to which a 100 c.c. Porges syringe was accurately fitted was sterilized and well lubricated with petrolatum. The external jugular vein was exposed, a slit made in it at its upper end, and the cannula tied into the vein pointing away from the heart. Eighty c.c. of blood were aspirated into the syringe and the vein was ligated above the cannula. A slit was then made in the vein an inch nearer the heart and the cannula inserted pointing toward the heart. The blood was slowly injected, the vessel was ligated and the incision closed. Uneventful recovery.

EXPERIMENT 2.—Small dog, donor; medium-sized dog, recipient. A Y cannula and a 100 c.c. Porges ground-glass syringe were used, after usual preparation of the apparatus. External jugular vein of each dog exposed. The vein of the recipient was ligated near the distal end, stripped of blood and an artery clamp applied proximally. The recipient was bled 100 c.c. from another vein. An artery clamp was placed high up, distally, on the vein of the donor, the vessel was stripped of blood and ligated at the end nearest the heart. Each vein was in turn cut squarely across near the ligature, caught up at equidistant points with mosquito forceps and irrigated. Each vein was then slipped over an arm of the cannula and tied in position. The cannula tips now pointed toward the head in the donor's and toward the heart in the recipient's vein. The clamp on the donor's vein was removed and the syringe filled with blood, after which the clamp was reapplied. The clamp on the recipient's vein was then removed and the blood (100 c.c.) slowly injected. The clamp was then reapplied. The process was repeated and 75 c.c. more of blood were injected into the recipient's vein. The vessels were ligated and the wounds closed. Blood retained in the apparatus was liquid.

Results.—Blood-smears twenty-four hours afterward showed red cells normal in all respects. There was a normal percentage of polynuclear leukocytes, and no evidence of phagocytosis of the red cells could be found. Observation of the recipient for a number of days showed nothing abnormal.

EXPERIMENT 3.—Medium-sized dog. Usual preparation of apparatus. Three-inch exposure of external jugular vein. A clamp was placed high up on the vein, the blood was stripped out of it and a clamp placed nearer the heart. The vessel was then cut in the center between the clamps, the cut ends grasped with mosquito forceps, irrigated and each cut end slipped over one arm of the cannula and tied in position. One hundred c.c. of blood were transfused from the distal into the proximal end of the vein. Uneventful recovery.

EXPERIMENT 4.—Medium-sized dog. A 100 c.c. one-piece tubular glass chamber with divergent cannula at its base was used. Transfusion from the common carotid into the internal jugular vein toward the heart was performed. A large aspirating syringe fitted to the neck of the chamber exerted the desired positive and negative pressure. Four hundred c.c. of blood were transfused. Recovery prompt.

EXPERIMENT 5.—Medium-sized dog. Apparatus as in Experiment 4. Both external jugular veins were exposed and 350 c.c. of blood were transfused from the left into the right toward the heart. Uneventful recovery.

EXPERIMENT 6.—Two medium-sized dogs. Apparatus consisted of the Porges syringe and Y cannula with usual preparation. The donor in the experiment had been the recipient in one of the preceding experiments. Internal jugular of donor and external jugular vein of recipient exposed. Vessel clamp on the distal end of the donor's vein, which was stripped free of blood and ligated toward the heart, cut near the ligature, the end irrigated and tied over one end of the cannula. The recipient's vein had vessel clamp applied proximally. The vein was ligated toward the head and cut across near the ligature, the end irrigated and tied over the other arm of the cannula. Two hundred and fifty c.c. of blood were transfused from the donor into the recipient. Recovery was uneventful.

TRANSFUSION IN A HUMAN SUBJECT

Thus far, we have used our apparatus in but one human transfusion. The donor was a healthy, middle-aged man with negative history. The recipient was a patient about 50 years old with a severe case of pellagra. Preliminary hemolysis tests were negative. The patients were placed side by side with heads in opposite directions; their left arms were extended at right angles so that their elbows were in apposition. Preliminary to the transfusion a moderate amount of blood was removed from the recipient. The median basilic vein of each was freed by dissection for a distance of about three inches. The vein of the recipient was ligated distally, stripped in a proximal direction and a clamp applied high up. A vessel-clamp was applied to the distal end of the donor's vein, the vessel was stripped in a proximal direction and ligated. Petrolatum was applied to the field of operation. The vessels were in turn cut squarely across, caught with mosquito forceps, washed out with salt solution and tied over the arms of the Y cannula. One hundred and sixty c.c. of blood were transfused. Uneventful recovery.

Some may hesitate to use the apparatus because of the fear of fat embolism from the petroleum used to coat the instruments. Certain facts which speak strongly against such a possibility may be mentioned. Physiologic salt solution at body temperature, repeatedly aspirated and expelled from the petrolatum-coated syringe, did not show an accumulation of fat on the surface of the solution. Even were fat introduced into the circulation, (and this we think unlikely) it would be in an amount so small that no serious effects could result. The animals used in our experiments showed no evidence of embolism. Carrel,[2] in performing vessel transplantation, used large segments of vessels which had been placed in petrolatum; he reports no ill effects.

While our technic seems simple, every step outlined in its execution is essential to its success. The careful coating of the apparatus with petrolatum, stripping of the vessels, thorough cleansing of their cut ends with salt solution, and gradual injection of the blood are most important. The method is in accord with experimental observations and has thus far proved entirely successful in practice, yet it must be understood that this report is a preliminary one, and that the work is as yet in the experimental stage. At present, however, the method appears to possess the following advantages:

1. The amount of blood transfused can be accurately measured.
2. The rate of flow may be definitely controlled.
3. There is simplicity of technic with great saving of time. In emergency cases this should be of great benefit.
4. Success in the transfer of blood is assured.
5. There is lessened danger of transfer of disease from the recipient to the donor.

103 State Street—72 East Madison Street.

Large-Celled Sarcoma of Brain.—The patient, a boy aged 16, was brought to the out-patient department for deafness. On investigation there seemed to be no deficiency in the auditory apparatus, but very slow cerebration. No paralysis or other motor symptoms were found, except tremors of hands and nystagmus. Sight was good, but there was double optic neuritis, slight pain in the head, and no vomiting, except on one day. He was admitted as an in-patient a few days later, and he become progressively more and more drowsy; he could, however, take his food, and had no incontinence. About two weeks later sight began to fail rapidly; there was intense optic neuritis in both eyes. An operation was proposed to relieve pressure, but the patient in about twenty-four hours passed into a condition of coma and died from apparently sudden cardiac failure.—John T. Leon, *Proc. Roy. Soc. Med.*, July, 1910.

2. Carrel: Ann. Surg., 1910, lii, 462.

DIPHTHERIA IN ITS RELATION TO PUBLIC HEALTH

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Many of the difficulties encountered by those engaged in public health work arise from the failure of many practitioners to realize the significance of certain facts that are matters of common knowledge to laboratory workers. The following paper is based on an analysis of the examinations of throat cultures at the bacteriologic laboratory of the Indiana State Board of Health. The facts presented are not essentially new, but because of their importance in public health work their rehearsal is thought to be warranted.

The total number of throat cultures examined for diphtheria bacilli during the year ending Oct. 31, 1910, was 2,288. Of these, 624, or 27.2 per cent., were positive.

The influence of school attendance on the incidence of diphtheria in this state is quite marked. Smith's report[1] to the London County Council in 1896 showed that the greatest incidence of this disease in England and Wales was among children from 1 to 3 years old, *i. e.*, before the school age. According to our statistics, however, only 17 per cent. of positive first cultures were from patients under 5 years of age, while 58 per cent. were from patients between 6 and 14, and 12 per cent. from patients between 15 and 20. The average number of positive first cultures per month during the vacation period was sixteen, as contrasted with a monthly average of seventy-seven during the school term. The influence of attendance at school appears to be most marked at the beginning of the school year, since the average for September, October and November was 110 positive cultures, while for February, March and April it was only twenty-three. The results last year were in the same proportion.

While age is an important factor in the etiology of diphtheria, it is a mistake to consider the disease exceedingly rare in adults. Thirteen per cent. of our positive first cultures were from patients over 21 years old. If cultures had been taken from as large a proportion of the cases of sore throat in adults as in children the percentage of positive results in grown persons would undoubtedly have been larger.

In 1,164 cases the physician made some definite statement as to clinical diagnosis. The results of the comparison of the clinical and bacteriologic diagnoses are shown in Table 1.

TABLE 1.—THE RELATION OF BACTERIOLOGIC TO CLINICAL DIAGNOSES

Clinical Diagnosis	Bacteriologic Diagnosis Positive	Negative	Totals
Diphtheria	161	118	279
Not diphtheria	118	537	655
Doubtful	81	149	230
Totals	360	804	1,164

Of 279 cases diagnosed as diphtheria by the physician, only 161 or 57.7 per cent., proved positive. Of 655 cases diagnosed as tonsillitis, ordinary sore throat, etc., *i. e.*, "not diphtheria," 118, or 18 per cent., showed the bacilli in cultures. Out of 230 "doubtful" cases, eighty-one, or 23 per cent., were found to be diphtheria. These percentages are not materially changed if the figures for the last two years, representing a total of 2,047 positive first culture cases, are taken. This is not due to local conditions in Indiana. At the Boston City Laboratory,[2] 68 per cent. of cases diagnosed as diphtheria clinically contained diphtheria bacilli; at the Philadelphia Laboratory,[3] 83 per cent.; and at the Chicago Laboratory,[4] only 34 per cent.

That the presence of a membrane or exudate is no absolute criterion in diagnosis is shown by the fact that of 845 cases in which a membrane or exudate[5] was said to be present, only 288, or 33 per cent., were positive, while of 271 cases with no membrane or exudate, forty-three cultures, or 16 per cent., were found to contain diphtheria bacilli.

The chances of error in the clinical diagnosis of diphtheria should be borne in mind by physicians on account of the necessity of quarantine in this disease. It is evidently unjust to both the patient and his family to place him in quarantine on a clinical diagnosis of diphtheria which, in over 40 per cent. of the cases, is proved by bacteriologic examination to be incorrect. On the other hand, it is not right to endanger the community by allowing a child to go about at will because a physician, on clinical grounds alone, has pronounced the case not diphtheria. Such diagnoses are proved bacteriologically wrong in about 18 per cent., of the cases. The statement seems to be warranted, then, that a physician is never justified in depending solely on the clinical picture for final diagnosis when the results of a laboratory examination can be had within a reasonable time. This statement applies not so much to treatment as to the proper regulation of quarantine.

Of 350 positive first culture cases, in which the physicians gave some information as to exposure, in only ninety-four (26.8 per cent.) did the patient give a definite history of having been in contact with some person suffering from diphtheria. In 109 instances, 31.1 per cent., diphtheria was present in the community but the patient had not been exposed, while in 150 cases, 42.8 per cent., no source of infection could be found.

There is no law or rule in this state requiring one or more negative cultures before a patient is released from quarantine. Hence, the records of this laboratory furnish very little data concerning the length of time diphtheria bacilli may remain in the throat after apparent recovery from the disease. The records of last year, however, show that in thirty-six cases, diphtheria bacilli were still present, as shown in Table 2.

TABLE 2.—RECORDS OF PRESENCE OF DIPHTHERIA BACILLI

After 6 to 10 days in	6 cases
After 11 to 15 days in	10 cases
After 16 to 20 days in	10 cases
After 21 to 25 days in	3 cases
After 26 to 30 days in	4 cases
After 41 to 45 days in	2 cases
After 58 days in	1 case
Total	36 cases

SUMMARY

The influence of school attendance on the incidence of diphtheria is shown (a) by the very large percentage of cases that occur in children within the school age, and (b) by the higher monthly average of positive cultures received during the school months as compared with the vacation months.

1. Smith: Jour. State Med., 1896, iv, 169.

2. Twenty-Ninth Ann. Rep. Health Dept. of Boston, 1900, p. 96.
3. Personal Communication from Dr. J. S. Neff.
4. Rep. Chicago Board of Health, 1905, p. 46.
5. No distinction is made here between a membrane and an exudate, because the statement of the physician was in many instances so confusing that an attempt at distinction was impracticable.

The chances of error in the clinical diagnosis of diphtheria are so numerous and the period of time during which virulent bacilli may remain in the throat after apparent recovery is so variable that a physician is never justified in quarantining or releasing a diphtheria patient without a bacteriologic examination, if such is obtainable.

PYELITIS OF PREGNANCY

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The etiology of pyelitis complicating pregnancy is somewhat obscure. The predisposing causes are the following:

1. Pressure on one or both ureters by the gravid uterus. Experimental studies on the cadavers of pregnant women show that the right ureter is more frequently pressed on by the uterus. It is well known that the right kidney is much more frequently affected in pyelitis of pregnancy.

2. Infection of the urinary tract; cystitis, ascending or hematogenous infection above the point of pressure.

3. Constipation is often stated as a possible cause, due to the presence of *B. coli communis* as the most frequent exciting cause. The hypothesis is that constipation and its inflammatory changes in the wall of the colon permit the bacilli to be carried directly from the colon to the pelvis of the kidney, and the close proximity of the colon to the right kidney rather strengthens this hypothesis.

4. Infectious diseases.

5. Traumatism is said by MacFarlane to be more often the predisposing cause than generally supposed.

6. Physical conditions which lower the vitality of the patient, such as exposure to cold, lack of proper food, etc.

7. Multiparæ and primiparæ seem to be almost equally affected.[1] So far as one can judge from reported cases, there does, however appear to be a slight excess of primiparæ.

8. From the fifth to the eighth month is the usual time of onset.

The exciting causes are (Mirabeau):[2] (1) gonorrheal infection; (2) pyogenic micrococcus infection; (3) *B. coli communis* infection; (4) tuberculous infection.

Tuberculous infection is well recognized as of frequent occurrence in cases of pyelitis, yet its presence during pregnancy would immediately raise the suspicion of its existence prior to the pregnancy, in which case pyelitis of pregnancy would not exist. Gonorrheal and pyogenic micrococcus infections are much more probable. The literature does not, however, warrant percentage statements. Swift[3] collected sufficient cases to warrant the assertion that *B. coli* infections are the most frequent in these cases: in seventeen examined bacteriologically this bacillus was found in pure culture seventeen times.

The diagnosis is that of a pyelitis developing for the first time during pregnancy, and usually disappearing before or during the puerperium.

The onset may be insidious or stormy, often with the marked chills and fever of advanced sepsis. The course depends on the exciting cause and the treatment. In most cases, especially those due to *B. coli*, the systemic and urinary signs disappear gradually within a few (two to ten) weeks under the treatment outlined below. In the forty cases collected by Swift, spontaneous premature labor occurred four times, was induced once, nephrotomy was performed once ante partum and four times post partum. Opitz[4] states that in the cases reports of which were collected by him, out of sixty infants born, seven were stillborn or died soon.

The following treatment is rational and well supported by those who have written on the subject:

1. Absolute rest in bed.
2. Fluid, preferably milk, diet.
3. Mild catharsis.
4. Hexamethylenamin, 0.5 gm. every three hours night and day in a full glass of cold water. The frequency of dosage is gradually lessened as the case improves.
5. Posture to relieve the ureter on the affected side, if the infection be single. The patient is instructed to lie as much as possible on the left side, should the right kidney be affected.
6. The statement that interruption of pregnancy is seldom if ever necessary appears to have the support of all those who have had experience with pyelitis of pregnancy.
7. Autogenous vaccine treatment has found favor with Hicks, and future experience may fully demonstrate its usefulness.
8. Topical applications in the bladder, or in the pelvis of the kidney, of the salts of silver, or other like antiseptic solutions, seem to be of service in severe cases, although in the average case of *B. coli* infection, the patient will do well on hexamethylenamin alone.

The following case will serve as an illustration:

Mrs. R., aged 23, primipara, pregnant six and one-half months, voided normal urine one week previous to the onset of the pyelitis. August 27, the patient had a chill, the temperature reaching 103 F., taken by mouth. From the first, pain was complained of on the right side of the abdomen from the right hypochondriac region downward into the pelvis. There was no abdominal distention and very little rigidity over the right kidney, which was very tender on slight pressure. The second day of the illness, urinalysis showed the presence of pyelitis, and blood examination proved a leukocytosis of 20,000 per cm., with 87 per cent. polynuclears. The urine gave a heavy trace of both serum and nucleo-albumin; one pus-cast was found; the pus-cells were well distributed, not in clumps, forming on sedimentation one-fifteenth of the whole bulk of the urine; specific gravity 1,024; sugar, none; reaction, strongly acid to litmus. The ureters were not catheterized because the diagnosis seemed clear without the operation. The patient was convalescent September 1 at the end of about a week from the onset, the temperature twice reaching 104. Bacteriologic examination of the urine, drawn aseptically from the bladder, showed a bacillus of the morphology and cultural characteristics of the colon bacillus.

For some weeks previous to the onset of pyelitis and during the remaining months of the pregnancy, the patient complained of the most intense itching, worse at night, and accompanied by a maculopapular eruption generally distributed over the trunk, arms and legs, but not on the face. The condition being mistaken at first for pediculosis vestimenti because the eruption at that time consisted in little more than the marks of vigorous scratching, antiparasitic treatment was rigorously tried without effect. Mild catharsis with menthol applications gave temporary relief. Yet despite every method of treatment we could devise the patient lost night after night of sleep because of the itching. October 30, two weeks before term, I delivered her of a normal six-pound infant. Within

1. Cragin: Med. Rec., New York, July 16, 1904.
2. Mirabeau, S.: Schwangerschafts-Pyelitiden, Arch. f. Gynäk., 1907, lxxxii, 485.
3. Swift, J. B.: Boston Med. and Surg. Jour., Feb. 21, 1907.
4. Opitz, E.: Ztschr. f. Gynäk., 1905, lv.

twenty-four hours the itching had subsided, and the eruption disappeared within three days.

The urine contained albumin and pus at intervals during the last month of the pregnancy in amounts sufficient to cause anxiety, and at times very little of either. The last specimen examined the day before delivery was free from both pus and albumin. At no time after the attacks described above were serious systemic effects noted. The urine after delivery contained neither pus nor albumin.

Therapeutics

INFANT MORTALITY: MILK

Few subjects have attracted more attention during recent years than that of infant mortality. It is not a new subject, for it received, thirty or forty years ago, much attention from members of the medical profession who specialized on diseases of infancy and childhood. But it seems to have been the rule that little attention was paid by the public to what was said by physicians. After several decades it seems to have occurred to political economists and sociologists that many lives might be spared to the state, presumably for useful service, if a little more attention was paid to the prevention and cure of some of the diseases which cause an astonishing mortality among babies.

An infant is defined by Foster as "a child not yet old enough to talk and walk."

Dr. J. Lewis Smith ("Diseases of Children," fifth edition, 1881) says, "Infancy extends from birth to the age of two and one-half years, or until the completion of first dentition."

The extent of the mortality among infants has been variously estimated by various statisticians. An estimate, which is generally accepted as not far from the fact, is that 15 per cent. of all children born die before they are one year old. Approximately one-third of these deaths during the first year are due to congenital malformations, deformities and weaknesses; another third to diarrheal diseases; a little less than one-fourth to respiratory and tuberculous diseases; and the remainder to other diseases.

It is toward the diminution of the number of deaths from diarrheal diseases that the present crusade is most conspicuously directed. A very large proportion of these deaths occur during the hot weather, between July 1 and October 1, and are directly traceable to improper feeding and improper food. Hence arises the great importance of the problem of feeding the infant.

When the fact is recalled that the milk of different animals varies in composition, it is not necessary at the present day, and in the present advancement of scientific knowledge, to enter on any argument to attempt to prove that the milk of the human mother is the very best food for the human infant during the early months of its life. Every woman, therefore, who gives birth to a living child, unless she is suffering from some serious disease, should nurse her child. This course is not only decidedly advantageous to the mother, but is also of the greatest importance to the child.

No artificial method of feeding has ever been devised which is as beneficial as nursing at the breast of a healthy mother. Unfortunately, many mothers object to performing this duty on various grounds; some because they have sore nipples and nursing is painful; others because the baby will not take the nipple, and therefore is given a bottle instead; others because they think that their milk is not adequate in quantity or of sufficiently good quality to properly nourish the baby; others because they think that their health is being undermined by the drain on the system incident to lactation; and still others because they are unwilling to give up social pleasure so as to be available to nurse the baby every two or three hours. All these conditions should be taken into account by the physician, and such as are present in any individual should, if possible, be removed. He should emphasize to the mother the great importance, both to herself and to her baby, of providing the natural food from her own breast for her baby. He should also give explicit directions to the nurse in regard to the care of the breasts and nipples so that the latter may not get sore, a condition which not infrequently is accompanied by serious diminution of the flow of milk. The nurse should be instructed in regard to the frequency of nursing, and entirely to avoid feeding the baby (unless it is too weak to nurse) anything except what it extracts from its mother's breast. She should also be instructed in regard to the food which should be given to the mother in order to encourage the flow of milk, and in regard to requiring the mother to rest, and to avoid overexertion, which sometimes seems to diminish the flow of milk. It should be impressed on the nurse that it is a reflection on her ability if her puerperal patient does not nurse her baby.

It perhaps seems to some to be a waste of time to write or read anything so trite and commonplace as the statements above, but their great importance amply justifies their repetition at this time and in this place, and especially because (1) there are a few physicians who even now do not insist on their patients nursing their own babies, because (2) some nurses encourage young mothers not to nurse their babies, but to bring them up on the bottle, and because (3) many mothers insist that they do not want to nurse their babies on account of the inconvenience which is associated with the performance of this maternal duty.

If the mother cannot or will not nurse her own baby, the next best resource is a good wet-nurse. By this means the baby is supplied with human milk, and if the nurse is healthy, and was delivered at approximately the same date as the child's own mother, the substitute will usually prove very satisfactory. But practically, this method of feeding a baby is applicable to only a very limited number of the babies who are denied nourishment at their own mother's breast.

In connection with this subject the question arises, How long should maternal lactation be continued? Thirty years ago it was advised to begin to give other food than milk at the age of six months, and to discontinue lactation entirely at the end of twelve months, or, if this time came during the summer, to postpone weaning until the hot weather was over. More recently, other writers, like Dr. Joseph E. Winters of New York, have maintained that other food should be added after the second month, at which time the maternal milk shows a decided diminution in the amount of protein and mineral constituents. Winters maintains that "it is physiologic to wean as soon as practicable after the second month," but that among the poorer classes, on account of the difficulty of getting fresh, pure milk, weaning should not be advised at the end of the second month, but that nursing should not be continued beyond the fifth or sixth month. This advice will be accepted with considerable caution by most practitioners, who prefer,

as a rule, that, if there is a good supply of milk of normal quality, supplementary feeding should commence at from four to six months, and nursing should not be entirely discontinued until from the tenth to the twelfth month. On the other hand, if a mother is determined not to nurse her baby at all, on account of her desire to enter actively into social life, or to avoid the trouble and inconvenience of lactation, the physician may propose, as a sort of compromise, that she should nurse the baby until the end of the third month, and then wean it. If she will do this, the infant will be carried over the period—the first three months of its life—during which artificial feeding is conducted with the greatest difficulty and the least success.

But there yet remains in addition to the not inconsiderable number of mothers who absolutely refuse to nurse their babies, another by no means small number of those who think that they cannot nurse their babies and do not, and still others who for various reasons really cannot nurse their babies.

When human milk is unobtainable, the best substitute, from a practical point of view, is cow's milk, because it can generally be obtained in abundance in a more or less fresh state. Its composition is well understood, also the respects in which it differs from human milk. Like everything else in common use, it varies greatly in quality, and some of these variations are intimately associated with unhealthfulness. Years ago consumers were especially disturbed by the abnormal proportion of water which many specimens of milk contained, and which was alleged to have been introduced surreptitiously by the producer or the dealer. This adulteration has largely been prevented by state legislation and the activity of local health boards.

With increasing knowledge of fermentation and putrefaction, and the relation of bacteria to these processes, it became evident that milk, although kept free from intentional dilution and contamination, readily underwent deleterious changes under the influence both of its inherent tendencies and of extraneous contaminating matters accidentally introduced into it. At present the most important cause of the deterioration of milk and the development of deleterious qualities in it appears to be the growth of bacteria. It seems to be practically impossible, even with the greatest care, to secure milk which is entirely free from bacteria, even when it is first drawn from the cow. Possible sources of contamination are dust and dirt in the air of the barn or dairy, and manure and other dirt loosely adherent to the hair of the cow, the hands and the clothing of the milker, and the utensils used in the transportation of the milk.

It would consequently appear that the work of extracting the milk from a cow should be conducted in the same way as an aseptic surgical operation.

1. The barn, or whatever place is occupied when the cow is milked, should be constructed so that it can be readily and thoroughly cleaned, and it should be cleaned at short intervals. This will be accompanied by a diminution in the amount of dirt and dust and bacteria in the air, and so the amount of contamination is diminished.

2. The milker, whether milkmaid or milkman, should wear clean clothing and have his hands cleaned by careful washing.

3. The cow should be made clean by washing and regular brushing, so that no manure adheres to the hair to be shaken or brushed off into the milk.

4. The utensils used in handling the milk, and especially the milk-pails, should be thoroughly sterilized by careful washing with boiling water.

By using effective caution in these four particulars the contamination of the milk may be greatly lessened. As precautions in these directions are imperfectly carried out, the number of bacteria increases and the conditions are more favorable for early deterioration of the milk.

Practically, most milk which is furnished to the consumer contains an abundance of bacteria, and an important practical problem is how their injurious effects may be avoided. It has been found that the growth of bacteria is prevented by a low temperature. Therefore, it is apparent that all milk should be cooled to a temperature not above 50 F. as rapidly as possible, as soon as it is drawn from the cow, and it should be kept at a temperature not above 50 F. until it is used.

But what milk-producers should do, and what they really do, are very different things. It is found that a large proportion of milk actually furnished to consumers contains a large number of bacteria, and that in many cases, through the growth and multiplication of the bacteria, it has already undergone changes which render it an unsafe food for human beings, and especially for infants. Not so very many years ago the advice was given to obviate this defect by "sterilizing" the milk by boiling it. It was even advised to sterilize all the milk which was fed to infants. This was soon found to be objectionable (1) because it altered the taste and made the milk less palatable, and (2) because exposure to such a degree of temperature as was necessary to boil milk produced such changes in it, including a destruction of the enzymes, that it was not a good food for infants.

Next in order to avoid this interference with the digestibility of the milk, it was proposed to subject the milk to such a temperature, below the boiling-point, as would inhibit the growth of bacteria and would not make other objectionable changes in it. This temperature was found to be about 140 F., and the process of heating the milk to this temperature was designated as "pasteurization." In recent years pasteurization has become almost a craze, and has been extensively employed, especially in large cities, and unquestionably with a favorable influence on infant mortality. But some have objected to this process, and here we must again quote Winters, who maintains that even pasteurization causes a dissociation of the organic combination of the protein and mineral constituents of the milk so that they are less suitable for assimilation by the infant. Where it is possible for the consumer to get milk which has been produced under favorable conditions, and to get it at once, as soon as it comes from the cow, without the delay incident to transportation, and when it is properly cared for by the consumer and used within twenty-four hours, there is no need of pasteurization.

Where, on the other hand, as is the case in most large cities, milk is twelve or twenty-four hours old when it reaches the consumer, and consequently at least a part of it is thirty-six or forty-eight hours old before it is consumed, and when the conditions under which it has been produced are unknown to the consumer, great care must be exercised to keep it at a low temperature until it is used, and then, for infants it certainly should be pasteurized.

During recent years municipal boards of health, by the enactment of ordinances regulating the production

and distribution of milk, have accomplished very gratifying results in improving the quality of milk. Occasionally, however, it becomes contaminated with pathogenic organisms. Epidemics, more or less extensive, of typhoid fever, scarlet fever, and diphtheria, have been traced to milk which has become infected. It seems proved that tuberculosis is caused by drinking milk coming from tuberculous cows and infected with tubercle bacilli. These facts are used as an argument, by some, for the routine pasteurization of all milk used for human consumption. It has been shown that subjecting milk for twenty minutes to a temperature of 140 F. destroys the pathogenic organisms therein.

A conservative man might well hesitate to advise universal pasteurization, but it is evident that the fresher the milk and the better the conditions under which it is known to be produced and distributed, the less need is there for any treatment designed to inhibit the activity of germs. On the other hand, the longer the time that elapses from the milking of the cow to the consumption of the milk, and the less that is positively known as to the salubrity of the conditions under which the milk is produced and distributed, the greater necessity is there for resorting to some means of destroying the pathogenic and other bacteria which are, or which are likely to be, present. For thus destroying the microorganisms in milk, which are such a menace to the health of consumers of milk, and especially of infants and young children, no method, at present in general use, is of more practical utility. To a family which has a healthy cow in its own stable cared for by a cleanly and careful man, it is not to be suggested. To one which has to use milk produced no one knows where, under conditions of which the consumer knows nothing, and which is of unknown age, pasteurization will often prove the means of avoiding not only the local disturbances of the digestive organs, but also sometimes of escaping one of the general infectious diseases.

Special Article

TYPHOID FEVER IN DES MOINES, IOWA

(By Our Special Commissioner)

Des Moines, the capital and largest city of Iowa, is situated almost at the center of the state, at the junction of the Des Moines and Raccoon rivers. It was founded in 1846 as a military post, incorporated in 1851 and became the state capital in 1857. It has grown rapidly, having in 1890 a population of 50,053, in 1900, 62,137 and in 1910, 86,732. This makes an increase during the last ten years of 40 per cent. It is noted particularly for its large insurance interests and its exceptional railroad facilities. Nineteen different railroads enter the city. The occurrence of bituminous coal in the region has helped largely to make the city an important manufacturing center. Among the products are books, carriages and wagons, engines and boilers, cotton and woolen goods, starch, and pottery. As one of the greatest educational centers of the middle west, it has thirteen colleges and technical schools with a total attendance of about six thousand. There are several fine public buildings and more are in progress of building. Its nineteen parks cover about seven hundred acres.

The city is built on hills, with drainage through numerous gullies into the rivers.

In 1908, Des Moines adopted the commission form of government. This consists of a council of five, including a mayor, who are elected by popular vote, with salaries sufficient for them to give all their time to city affairs. The use of the initiative, referendum and recall keeps the power of government in the hands of the people. The city has made rapid progress in many directions under this form of administration. Municipal expenses have been materially reduced; water, gas and lighting rates have been lowered; the streets and alleys have been cleaned, sewer connections extended, and the whole city put into what is usually termed a good sanitary condition.

TYPHOID RECORDS IN DES MOINES IMPERFECT

Des Moines is not recognized by the United States Census Bureau as a registration city. This is not a creditable circumstance for a city of such size and importance. Although public documents dealing with the street railway situation are numerous and complete, there has been practically nothing published in regard to the public health.

So far as can be ascertained, typhoid fever has existed for some time in Des Moines. In 1906, the only year for which published statistics are available, there were recorded eighteen deaths from this disease. On an estimated population of 77,000, this makes the death rate for that year, per 100,000 population, 23.4—a rate considerably higher than that of many American cities. The following statement by Whipple[1] is significant in this connection. "It is commonly assumed that in the northern parts of the United States a continued typhoid death-rate above 20 per 100,000 indicates that the public water supply is of questionable purity."

PRESENT OUTBREAK

The present outbreak of typhoid fever began about November 15 and has continued, although with some falling off, up to the present date. It is said to be of a very virulent type, thirteen deaths having occurred in five weeks. On December 5, 106 cases had been reported to the health authorities, and it is probable that many more existed, as physicians in Des Moines are not required to report typhoid cases. On this date there were reported to be ninety cases in the hospitals. An investigation of the known cases was made by the city physician, Dr. Sayler, and presented to the council. According to a published summary of this report, the cases were fairly evenly distributed over the city—seventy-two on the west side, twenty-two on the east, eight on the north (including Highland Park), and four on the south. Rarely was there reported more than one case in a house. This distribution corresponds approximately to that of the population. The cases were about equally divided between adults and minors; forty-one were school children or students, while the remainder were scattered among a great variety of occupations; ninety-eight had used city water, exclusively or at times; there were sewer connections in the houses of eighty; and twelve dairies were represented.

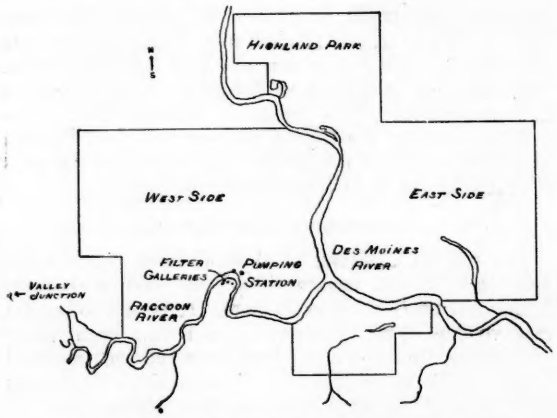
WATER SUPPLY

The water supply of Des Moines is controlled by a private company. In the report of the Health Department for 1906 a detailed description of the supply was made by Mr. Floyd Davis, at that time consulting chemist and sanitary engineer to the Water Works Company. This report, together with the facts obtained

1. Typhoid Fever, John Wiley & Sons, New York, 1908, p. 230.

from personal examination by your commissioner, is the basis for the following description. The water is taken from so-called filter galleries constructed parallel to the Raccoon River in the vicinity of the Eighteenth street viaduct (see diagram). No part of the supply is taken directly from the river. The principle involved in the use of filter galleries is that the ground water, which is continually flowing toward a river at some distance below the surface of the ground, should be intercepted, and collected for use. Ground water comes from rain water which in passing through the earth strikes an impervious layer, and runs off in the direction of the slope of the layer. Ground water is consequently filtered and of a high grade of purity for drinking purposes. Openings in the soil, however, are liable to be washed out so that the filtration is not perfect. Under these conditions house and privy drainage may run into the ground and pollute the ground water.

The galleries at Des Moines are built of gravel with a blue clay bottom and board sides. At the end of each is a collecting well from which the water is pumped into the city mains. In the spring and in wet weather the level of the ground water is considerably above that of



Map of vicinity of Des Moines, to explain water supply.

the river so that under these conditions the supply is very largely from the ground; but during dry times the water is mainly that which has filtered through from the river, and then the danger of pollution is greatest.

The Raccoon River rises in the northwestern part of the state and flows in a southeasterly direction into Dallas County where it is joined by the South Raccoon River. From there it flows east into Polk County, joining the Des Moines River at Des Moines. It is fed at frequent intervals by numerous creeks, some of which are of good size and drain fairly large areas. It is exposed to pollution from at least five communities—Valley Junction with a population of about 3,000, Adel with about 1,400, Jefferson with about 3,000, Perry with about 4,500, and Guthrie Center with about 1,500. Three of these have sewers discharging either directly into the river or into its tributaries. The numerous farming districts in the region of the river's flow are also possible sources of danger. The nearest of the main sources of pollution is Valley Junction, five miles by railroad and about ten by river west of Des Moines. A sewer at the Rock Island railroad shops at the west end of the town discharges into a creek which enters the river just below the town. An examination of this was made by your commissioner. A sample collected on December 23 contained 29,300 bacteria per cubic centimeter, of which 200 were acid forming. This result indicates a rather high degree of pollution.

It must here be noted that the water company has recently opened a new filter gallery near the pumping station. The date of opening, according to a published statement made by representatives of the water company, was November 15.

For the past year the character of the water has been investigated for the company by means of weekly chemical analyses. The manager of the company has stated that these "tests have shown no strong percentage of impurities." No regular bacterial examinations are made.

The water supply has been under suspicion for some time. That the method of filtration used was not efficient was contended in the federal courts last June during litigation concerning the water rates. In a letter to one of the Des Moines newspapers Dr. Gabel, professor of biologic sciences in Highland Park College says:

> You may call it a divine punishment or what you wish, but the facts are that last June we contended in the federal courts here that the system by which the city of Des Moines is supplied by water is antiquated, the filters are not properly constructed and do not keep out the bacteria and algæ which produce the bad odors and taste in the water and digestive and other disturbances in the consumers. I said that the water I had examined was not badly polluted, but of a suspicious character, which under conditions might become dangerous. As a result of my investigations I found and declared the filters inefficient and know of no one who proved them to be otherwise. In fact, I know of no one who ever made a complete scientific investigation of the water or of the efficiency of the filters. Although bacteriologic investigations were previously made we could find no records of them. . . . Regular examinations are necessary throughout the year.

Mayor Hanna is quoted in the same paper as saying that he believes that the present method is inefficient, and that tests made last year showed "evidences of typhoid germs" in the water. Dr. Albert, the state bacteriologist, is said to have found an excessive number of sewage bacteria in the river water, and to regard the filter galleries as a constant source of danger.

In addition to the sample of water from the creek at Valley Junction your commissioner has made bacterial examination of a sample of water from the Raccoon River just above the pumping station, and of city water. The samples were collected December 23. The river water showed an average of 137 bacteria per cubic centimeter, with *B. coli* present in 0.7 of a cubic centimeter. The city water averaged sixty-five bacteria per cubic centimeter, and no *B. coli* were present in 7 cubic centimeters. Although this examination shows that the city water is not badly sewage-polluted at the present time, still the bacterial count would be high for a good ground water to have. Also this does not prove that the water may not at some time become polluted.

CAUSE OF THE EPIDEMIC

As is well known, the most common means of infection in typhoid fever are water, milk, contact with cases and with carriers, and transmission to food, etc., by the agency of flies. No evidence has been adduced to show that infected milk is responsible for the 1910 Des Moines epidemic. A large number of dairies are represented among the cases, whereas in milk epidemics of such an extensive character only one or two dairies

would usually be involved. Contact infection may have played some part, but it is unlikely that this was the primary factor as the cases were scattered over a wide area. Fly-borne infection is hardly likely to have been an important cause in November and December. Simply by a process of elimination, therefore, the relation of the water supply to the epidemic assumes special importance.

From the statistics of 106 cases given above it will be noticed that nearly all patients had used city water prior to their illness. As this water is pretty generally distributed throughout the city this in itself would have little significance were it not for the fact that there has been practically no typhoid in Sevastopol, a suburb south of the city, where conditions are similar to those in Des Moines except that Des Moines water is used on only one street.

As stated above, examinations by your commissioner and others show that the Raccoon River is sewage polluted. That it contained typhoid bacilli just prior to the epidemic is rendered probable by the fact that there were in the autumn of 1910 at least two cases of typhoid fever in Valley Junction, and excreta from these cases may readily have passed into the river. That there has been considerable typhoid all over the state of Iowa increases the possibility of infection of the Raccoon River. According to Mr. Davis' report, referred to above, the conditions under which the galleries were operating at the time of the epidemic were exceedingly unfavorable. There was little rain in Iowa in 1910, the deficiency below normal at Des Moines from January 1 to December 23 being 13.88 inches. If any river water containing typhoid bacilli had entered the galleries imperfectly filtered, due to these unfavorable conditions, a typhoid epidemic would have been almost certain to follow.

That filter galleries after continued use do sometimes become inefficient has been shown by the case of Waltham, Mass., where the water supply was obtained for a long time from galleries dug near the Charles River, a method similar to that in use in Des Moines. Examination[2] showed that the supply had gradually become polluted, the contamination being due in the opinion of the State Board of Health partly to the passage of imperfectly filtered water from the river and partly to pollution of the ground water supply. At that time the level of the ground water was below that of the river, the same condition that recently existed at Des Moines. Waltham has been advised by the State Board of Health of Massachusetts[3] to look for some better source of public water supply. It is evident that the condition at Waltham presents in some respects an interesting parallel to that which obtained at Des Moines.

It has already been stated that a new gallery was opened on or about November 15. Suggestions have frequently been made that this had some connection with the outbreak of the epidemic. Whether or not this is so is not clear. If it were the sole cause, the outbreak would not have occurred until about ten days after the opening, whereas it was coincident with it.

Briefly, then, the situation at Des Moines may be summarized as follows: Examination of the topography of Des Moines and of the surroundings of the pumping station show that the public water supply is exposed to dangerous contamination. The results of bacterial examination confirm this view. At the time of the November outbreak conditions, meteorological and other, were especially favorable for an unusual degree of pollution. The sudden and extensive character of the outbreak, the uniform distribution of cases throughout the city in proportion to the population, the entire lack of evidence, so far as appears, that the disease was milk borne are other features that point to an infection of the public water supply as the main if not the sole cause of the Des Moines epidemic.

2. Annual Report of the State Board of Health of Massachusetts, 1904, p. 54.
3. Annual Report, 1905, p. 103.

New and Nonofficial Remedies

BORNYVAL.—Bornyval is a name applied to capsules containing borneol isovalerate $C_{10}H_{17}O.C_5H_9O$, the isovaleric acid ester of borneol, 0.25 Gm. (4 minims).

It is prepared by the condensation of equal molecular quantities of borneol and isovaleric acid.

Borneol isovalerate is a clear aromatic liquid, having an odor resembling oil of rosemary and at the same time a weak odor and taste of valerian. It is insoluble in water, but dissolves in all proportions of alcohol and ether. The liquid boils at 225° to 260° C. (417° to 426° F.) under ordinary pressure. At a pressure of 50 mm. it boils at 150° to 170° C. (302° to 338° F.). Its specific gravity is 0.945 to 0.951; it is dextrorotatory. The alcoholic solution 1:10 after the addition of a drop of phenolphthalein solution should be distinctly reddened by a drop of tenth-normal alkali.

Actions and Uses.—As borneol isovalerate forms a large part of oil of valerian, its action is similar to that of the official drug. It reduces reflex excitability and acts as a nervous sedative.

It is said to be useful in the various neuroses, especially those of the circulatory, digestive and central nervous systems.

Dosage.—0.25 to 0.75 Gm. (4 to 12 minims) from two to four times daily. It is best given after meals with some milk, coffee or similar drink to avoid eructations.

Manufactured by J. D. Riedel, Aktiengesellschaft, Berlin, Germany. (Riedel & Co., New York). U. S. trade-mark No. 56,451.

ANTIFORMIN. Antiformin is a strongly alkaline solution of sodium hypochlorite. In each 100 c.c. it contains approximately sodium hypochlorite equivalent to 5.68 gm. available chlorine, sodium hydroxide 7.8 gm., and sodium carbonate 0.32 gm.

According to the patent specification chlorinated lime is dissolved in water at the temperature of 35° C. To this a solution of sodium carbonate is added. After standing the supernatant liquid is decanted and to this sodium hydroxide is added.

Antiformin is a yellowish, clear liquid having the peculiar odor characteristic of hypochlorites.

The per cent. of available chlorine, of alkali hydroxide and carbonate may be determined by the methods described in the Reports of the Chemical Laboratory of the American Medical Association, 1911.

Actions and Uses.—Antiformin rapidly dissolves the bodies of bacteria with the exception of acid-fast organisms like the tubercle bacillus, on which it has no solvent action and which resists its germicidal action to a great extent. It dissolves other organic matters, such as those contained in sputum and feces. It exerts a strong oxidizing action and is disinfectant, antiseptic and deodorizing. It is said to be more than three times as active in germicidal action as phenol.

Based upon its property of dissolving most bacteria and the insoluble constituents of the sputum, Antiformin is employed in testing for tubercle bacilli. It is said to be useful for the sterilization of the surgeon's hands, of instruments and of wounds and for general purposes of disinfection. It is also said to be useful in certain skin diseases.

Dosage.—Externally in from 2 to 10 per cent. solution. In from 4 to 1,000 solution as a spray. As a disinfectant 5 per cent. solutions are used. For the demonstration of tubercle bacilli 15 per cent. solutions are suitable.

Manufactured by the American Antiformin Co., New York. U. S. patent No. 691,671 (Jan. 21, 1902; expires 1919). A process for Cleaning Beer Vats and Pipes, said process consisting according to the patent specifications "in subjecting the walls of said vats or pipes to the action of a solution composed of about 1 part of alkaline hypochlorite with about a half to one part of alkaline hydrate, substantially as specified." U. S. trademark No. 61,693.

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SATURDAY, JANUARY 7, 1911

CANCER AMONG THE AMERICAN INDIANS

Statistical investigations play an important part in the study of cancer, and modern methods are just as necessary here as in any chemical or microscopic research; faulty methods of collection or interpretation have made most of the earlier statistics of little worth. A large part of the energies of the German Central Committee for Cancer Investigation has been spent on statistics in these its earliest years of existence, if we may judge by the titles of the papers in its official organ; and one of the first reports from the newly established George Crocker Research Fund for the investigation of cancer indicates that the authorities directing this great American donation to medical science have considered statistical investigations an important basis for cancer research. It is stated in an article on cancer among American Indians, by Levin[1] of New York, that in order to study the ethnologic distribution of cancer an investigation under the Crocker Fund was begun simultaneously in the Hawaiian Islands, the Philippine Islands, Porto Rico, the Isthmian Canal Zone, and among the American Indians of the United States. That different races suffer to different degrees from cancer is a well-established fact, the low incidence of cancer in our own negro population being generally recognized, while British physicians in the scattered territory of that empire have testified to the infrequency of cancer in most of the dark-skinned subjects of the British crown. In Ceylon, for example, there were reported in one year but 234 cases in a population of nearly four millions, making a ratio of six cases per hundred thousand, as contrasted with the usual rate of seventy to a hundred cases per hundred thousand observed in the various countries of Europe.

So far as the Crocker Fund investigation is concerned, results complete enough for drawing conclusions have so far been received from two sources, the Canal Zone and the American Indians, because of the governmental organization and control of the medical service of these two groups. In the Colon Hospital there have been but thirty-five cases of malignant neoplasm during five years, among 54,249 patients, a remarkably low figure which can probably be ascribed, at least in large part, to the fact that the population of the Canal Zone is three-quarters negro.

As to the American Indians, returns furnished by 107 of the 130 physicians of the Indian Field Service showed but twenty-nine cases of cancer observed in a population of 115,455 during a time of practice ranging from a few months to twenty years. Since these Indians are distributed all over the United States and in parts of the country where it is known that the white population presents the usual number of cancer cases, climate, geography and geology cannot be advanced as an explanation of the relative immunity of the aborigines to malignant disease. Whether race, habits or diet are responsible for the difference cannot be said. Levin seems inclined to accept the rather prevalent view that "it is the modern civilization and the conditions created by it that give rise to the mediate causes which produce the disease." This view, however, does not fit well with the fact that among one of the oldest, and commonly considered most decadent of civilizations, the Chinese, cancer is relatively rare. In the Chinese population of Hong Kong, for example, the cancer mortality averaged 4.45 cases per hundred thousand during a period when it stood at 71.0 in England. Furthermore, cancer is extremely common in some animals; in dogs, especially, cancer is said to be a more common cause of natural death than it is in man. Does this mean that the dogs are more civilized than the Chinese and Hindus, or are we to believe that the association of the dog with man causes the poor quadruped to acquire the cancerous proclivities of the higher civilization?

Another statistical study of cancer published in the same journal brings out a point in cancer etiology which will undoubtedly arouse much interest, namely, the relation of alcohol to cancer. As the outcome of an extensive study of the vital statistics of Bavaria by a special committee appointed for this purpose, it appears that cancer is distinctly most frequent among those whose trades render them most likely to indulge in alcoholic beverages; the highest incidence of cancer is found among those selling alcoholic liquors, a fact which has also been brought out in other countries by statistical inquiries as to the relation of occupation to cancer. If this is true it may be that the efforts of the government to keep Indians and fire-water apart, while sometimes eminently unsuccessful, have on the whole been able to prevent wide-spread habitual indulgence and thus to remove this possible factor in civilized cancer morbidity. If the relation between alcoholic habits and cancer is eventually shown to be one of cause and affect, temperance advocates will have an argument which probably will carry more weight with the average individual than any and all the excellent reasons for total abstinence which they can now command.

1. Levin, Isaac: Ztschr. f. Krebsforsch., 1910, ix, 422.

THE BIRTH-RATE AND RACIAL STABILITY

The significance for the race of small families and the reduction of the birth-rate constitutes a problem of intense practical interest, especially at present. Many maintain that the children of small families, because they are better cared for, really grow up into better men and women—that is, better for the race—than do the less carefully nurtured and educated children of large families. This, of course, is on the assumption that the children of small families are, on the average, at least as well endowed with vital qualities as the children of large families. The subject, however, is by no means on a satisfactory basis for the drawing of final conclusions.

At the last meeting of the British Medical Association, in the section of medical sociology, a symposium was held on the social aspects of falling birth-rate. One of the speakers, Dr. D. W. Hunter,[1] believes that the elder-born children of a family are more liable to suffer from defects than the younger ones—that is, up to a certain limit. As a consequence, if the race or family stock is recruited mainly from the elder-born children, there is an inevitable tendency toward racial degeneration. As has been shown by bionomic statistics, the earlier members of familes of seven or eight children are likely to be less stable in physical health, less resistive in vitality to disease, more prone to neurotic conditions and with less mental equilibrium than those of later birth in the family. Where large numbers are taken, the physical and mental health of the children seems to increase on the average up to the seventh or eighth child. The descendants of earlier-born children, according to Hunter, show much more tendency to defect than the offspring of parents who are younger members. A series of generations of elder children would be especially likely to emphasize the defects of the family stock, whatever they might be.

The observation which has been made that successive children of the same mother, to the eighth or ninth child, show an average increase in weight of one-half pound at the time of birth, lends further support to the findings of the differences in physical and mental stability of the earlier and later offspring. The heavier children are likely to have better development, to be in better condition to stand the trials of existence during the early months particularly, and as a consequence, while the development of the nervous system is being completed during the first six months of extra-uterine life, disturbing factors in the process are fewer and less serious. The reason for this may be that the mother of later children is likely to be at a more suitable age to give strength of body and store of vitality to her child than the mother of an earlier child. Somewhere about twenty-five Hunter considers that a woman is best fitted to give birth to her first-born. After twenty-five the capacity to bear a vigorous, healthy child at the first birth rapidly diminishes. With regular pregnancies the power to reproduce well steadily increases until the mother reaches thirty-five years of age.

From the fact that the earlier children in large families are inferior to those born later, Hunter infers that the children of small familes, in which, as he says, there are no later-born, must be inferior on the average to the children of large families. The theory is interesting and worthy of further investigation, but cannot be regarded as proved by Hunter's data. At least one factor in the superiority of the late-born children—apparently the chief factor, according to his own theory—is the more matured vitality of the mother. But early marriages are the rule among the races and classes that multiply most rapidly. Women who marry at twenty-four (in time to give birth to the first child at the age which Hunter considers the most favorable for that event) are found more frequently among the classes in which children are not produced so numerously. It would seem as fair to say that there are no early-born children of comparatively late marriages as to say that there are no late-born children. It is at least possible to conjecture that the production of many children by immature parents might have as unfavorable an effect on the stability of the race as the production of but few children by better-matured parents.

Then, again, the infantile death-rate tends to be high where the birth-rate is high. Hunter offers no data to show whether the younger or the older children of large families survive in larger numbers. Among the poor especially, it seems possible that the inevitable increase of neglect and privation to which, during the critical period of infancy, the later comers in large families are subject, may counterbalance, to some extent, their superior physical endowment, thus favoring the survival of the inferior early-born rather than of the superior late-born.

It is held by some, moreover, that births in too rapid succession may so exhaust the mother's forces as to enfeeble her offspring. It was suggested by Professor Moore,[2] a speaker in the discussion that followed the symposium, that some nations have disappeared as world powers by allowing excessively prolific reproduction to sap the vitality of the race.

The whole subject needs further investigation; but at present Hunter's assertion that "the limitation of the family to two or three children inevitably means a nation of idiots, and that within a few generations," certainly seems to exceed the limits of sober scientific deduction. There are, no doubt, a number of elements in the problem of the falling birth-rate which have not been fully considered so far. The capacity to care for a few children is evidently a favorable factor for the race, and capacity to endow them with vitality and health of body and mind is an even more important one. As yet, however, we have scarcely begun to accumulate the data

1. Hunter, D. W.: Brit. Med. Jour., Aug. 20, 1910, p. 453.

2. Moore, Benjamin: Brit. Med. Jour., Aug. 20, 1910, p. 454.

required as a basis for any valid conclusions. These problems deserve careful study at the hand of physicians. Some very interesting statistics could surely be made by family practitioners of long experience, who have opportunities to see the differences between early and late-born children in large families, their relative chances of survival, and the comparative stamina possessed by children of late and early marriages, and of more and less prolific families.

FATIGUE AND SUSCEPTIBILITY TO INFECTION

The influence of fatigue on the development and course of infectious diseases was recognized long before the real nature of infection was known. There has existed a general belief, founded on observation during epidemics of plague and cholera, that physical or mental exhaustion rendered the organism more susceptible to the disease. In the writings of some of the earlier veterinarians we find statements that overexertion can cause glanders or anthrax in horses and cattle. The literature of the later part of the nineteenth century after the study of infectious processes had been put on a sound basis, abounds in clinical observations on the influence of fatigue in many diseases of microbic origin, such as pyemia, osteomyelitis, infective endocarditis and myocarditis, typhus, tuberculosis and influenza. In typhoid fever above all, fatigue plays an important rôle as a predisposing cause of infection; according to Roger it is more important than any other cause. Thus military surgeons note again and again that though soldiers while in garrison may be free from typhoid fever, they are liable to develop it as soon as they have undergone the strain of the maneuvers, although they are stationed in villages where there is no typhoid.

In 1890, twenty years ago, Charrin and Roger published their classical work on the breakdown of resistance to infection following physical exhaustion, a work which has until very recently remained the last word on this subject. They experimented on white rats, using the bacillus of anthrax and of symptomatic anthrax. The experimental animals were first made to run in a squirrel's cage for several hours till thoroughly tired, and were then injected, control rats being injected with an equal dose. Charrin and Roger found that the fatigued rats succumbed to the infection earlier than the non-fatigued, and that in some cases the latter survived a dose which killed the former in less than twenty-four hours. In one experiment five control rats, inoculated with the virus of symptomatic anthrax, survived, while all of the six fatigued rats, inoculated with the same amount, died, three of them in less than twenty-four hours.

These authors did not attempt to show what changes in the fatigued animals underlay this breakdown of resistance to infection, nor would it have been possible to do this twenty years ago with anything like the completeness which recent advances in the study of immunity have made possible. This next step has been taken by De Sandro,[1] working in Ferranini's clinic of industrial diseases in the University of Naples.

De Sandro repeated the work of Charrin and Roger, using, however, as his subjects dogs, rabbits and guinea-pigs, and for injection typhoid toxin. He has succeeded not only in confirming their results but in demonstrating some of the changes which take place as a result of fatigue and which seem to explain the loss of resistance to infection. He brought about fatigue in his animals by means of faradization, carried to the point of rapid contractions but without causing pain or extreme terror. Each series of animals experimented on consisted of four classes, Class 1 containing those which were fatigued by faradization each day for five to seven days before injection; Class 2 those which were fatigued just prior to injection and then daily after injection; Class 3 those which received the injection in a normal state and were then fatigued occasionally at intervals of several days; and Class 4 those injected and left at rest, the controls. After ten days the animals, if living, were given a second dose.

The task which De Sandro set himself was to ascertain the effect of overexertion, fatigue, on the duration of life, the body weight, the temperature, the character and number of leukocytes, the formation of agglutinin, opsonin, precipitin, antitoxin, antiendotoxin and bactericidin. On the last five substances his experiments are not very satisfactory and could hardly be regarded as conclusive, although the results obtained are significant enough to encourage further exploration into these fields. A brief review of the remainder of his work will show that he has been able to demonstrate very decided changes in the mechanism of resistance as a result of overfatigue.

All the animals which were subjected to fatigue died sooner than the controls, death coming more quickly in those which received the first injection in a state of exhaustion than in those which were exhausted only after injection.

Loss of weight was greatest in those animals which were fatigued repeatedly before injection. Thus one guinea-pig lost 245 gm., while the control lost only 105 gm.; one dog lost 1,500 gm., while the control lost only 200 gm.

In all the injected animals, fatigued and at rest, injection of typhoid toxin was followed by typical changes in the leukocyte count, namely, an immediate leukopenia, followed by a leukocytosis and then a return to the normal count. The polynuclears were first increased at the expense of the mononuclears, which later rose in number as the polynuclears fell, this being due to the increase in large mononuclears especially. In comparing the changes in the fatigued with those in the non-fatigued animals decided differences were observed,

1. De Sandro, Domenico: Riforma Med., 1910, xxxv, 841, 871. Briefly noted in THE JOURNAL, Sept. 17, 1910, page 1064.

which point to the importance of the mononuclear leukocytes in the defense of the body against infection as well as the polynuclear phagocytes. These differences may be summarized as follows: First, the leukopenia following injection was more pronounced in the fatigued animals than in the controls, being most pronounced in animals of Class 1. Second, the subsequent polynucleosis was later by several hours, was less intense and persistent, these differences also being most pronounced in animals of Class 1. Third, the mononucleosis appeared later, was less intense and less lasting in the fatigued animals. Fourth, while the second injection of toxin in the control animals caused only a slight leukopenia, in the fatigued animals it caused a very decided leukopenia, with only a slight subsequent increase in polynuclears and in mononuclears.

The results of De Sandro's observations on agglutinin formation as affected by fatigue are also very interesting. He found that the slight agglutinative power of all the serums disappeared after the first injection (negative phase). The serum of the control animals began to exhibit agglutinative power by the third to the fifth day, that of the fatigued animals not till the fifth to the eighth day, animals of Class 1 being always slowest to respond. All the control animals exceeded the fatigued in the amount of agglutinin formed.

De Sandro concludes that overfatigue favors greatly the development of infectious processes by its effect on the mechanism of defense of the body. It is to be hoped that this interesting study will stimulate research into the influence of fatigue on the formation of opsonin, bactericidal substances, etc.

DEATHS OF PHYSICIANS IN 1910

During 1910, the deaths of 2,324 physicians in the United States and the Dominion of Canada were noted in THE JOURNAL. Reckoning on a conservative estimate of 137,000 physicians, this is equivalent to an annual death rate of 16.96 per 1,000. For the eight previous years the death rates were as follows: 1909, 16.26; 1908, 17.39; 1907, 16.01; 1906, 17.2; 1905, 16.36; 1904, 17.14; 1903, 13.73 and 1902, 14.74. The average annual mortality for the period from 1902 to 1910, inclusive, was therefore 16.21 per 1,000. The age at death varied from 22 to 97, with an average of 59 years, 11 months and 4 days. The general average since 1902 is 59 years, 5 months and 28 days. The number of years of practice varied from 1 to 72, the average being 32 years, 8 months and 9 days. The general average for the past six years is 31 years, 5 months and 29 days. The chief death causes in the order named were "heart disease," cerebral hemorrhage, pneumonia, violence and nephritis.

CAUSES OF DEATH.—There were 335 deaths assigned to general diseases; 378 each to diseases of the nervous and circulatory systems; 231 to diseases of the respiratory system; 144 to diseases of the digestive system; 220 to diseases of the genito-urinary system; 172 to violence; 123 to senility; and 15 to unknown or vaguely described diseases. Among the principal assigned causes of death were "heart disease," 245; cerebral hemorrhage, 242; pneumonia, 193; nephritis, 166; senility, 123; accidents, 114; tuberculosis, 92; malignant disease, 77; after surgical operations, 71; angina pectoris, 57; paralysis and suicide, each 48; septicemia, 38; arteriosclerosis, 34; diabetes, 32; "uremia," 31; typhoid fever, 30; appendicitis, 25; gastritis, 22; anemia, 18; paresis, 17; myocarditis, 14; cirrhosis of liver, 13; cholelithiasis, 12; influenza, erysipelas, meningitis and intestinal obstruction, each, 11; homicide and insanity, each 10; rheumatism and gastric ulcer, each 9; locomotor ataxia and peritonitis, each 8; endocarditis and prostatitis, each 7; paralysis agitans, 6; aneurysm and pleurisy, each 5; dysentery, 4; tetanus, alcoholism and drug addiction, epilepsy, neuritis and pericarditis, each 3; typhus fever, anterior poliomyelitis, small-pox, scarlet fever, diphtheria, pellagra and gangrene, each 2; and yellow fever and Asiatic cholera, each 1.

The causes assigned for the 114 deaths from accident were railway casualties, 24; automobiles, 17; falls and poisons, each 15; horses and vehicles, 10; drowning, 7; fractures, 5; burns and exposure, each 4; ptomain poison, 3; sunstroke, gunshot wounds and asphyxia, each 2, and *x*-ray burns, poisonous gases and mines, each 1. The 48 physicians who ended their lives by suicide selected the following methods: firearms, 22; poison, 18; cutting instruments and strangulation, each 3; and asphyxia and drowning, each 1. All of the 10 homicides were due to gunshot wounds, and of these 3 occurred in feuds or affrays.

AGES.—Of the decedents 30 were between the ages of 91 and 97; 214, between 81 and 90; 456, between 71 and 80; 497, between 61 and 70; 434, between 51 and 60; 323, between 41 and 50; 235, between 31 and 40; and 83, between 22 and 30. The greatest mortality occurred at the age of 65, when 60 deaths were recorded; at 69 and 70, when 59 deaths occurred, at 72, when 57 died. There was 1 death each at 92, 94 and 97 years of age; 2 at 22; 4 at 96 and 5 each at 90 and 93.

YEARS OF PRACTICE.—By periods of ten years the deaths were as follows: in the first decade, 237; second decade, 338; third decade, 469; fourth decade, 497; fifth decade, 395; sixth decade, 275; seventh decade, 71; and eighth decade, 1, who had been in practice for 72 years.

MILITARY SERVICE.—During the year 397 died who had served in the Civil War, and of these 107 were with the Confederate cause, and 152 were surgeons of United States Volunteers. There were 12 veterans of the Mexican War; 3, of the various early conflicts with Indians on the frontier; 32 had served in the Spanish-American War and 13 in foreign wars. The Army lost 23 officers,

past and present; and in addition, 2 members of the Medical Reserve Corps, and 22 acting assistant surgeons; the Navy, 19; and the Public Health and Marine-Hospital Service, 9. The death loss of the Organized Militia was 35, of whom 6 had attained the grade of surgeon-general.

MEDICAL POSITIONS.—Medical colleges sustained the loss of 138 professors, lecturers, instructors and demonstrators during the year; hospitals lost 326 members of staffs; municipalities, townships and counties, 201 health officers or physicians; and boards of education and school boards, 91 members. There were 45 deaths of members of state boards of health and medical registration and examination; 49 of coroners and medical examiners; 87 of United States pension examining surgeons; and 118 of railway surgeons.

Of those who died, 3 had served in the House of Representatives of the United States; 15 had been members of state senates; 57 members of lower houses; 58 had been mayors; 39, aldermen or councilmen; 58 had served as justices of the peace or other civil officers; 19 as postmasters; 21 as editors; 13 were clergymen, of whom 2 were medical missionaries; 5 were attorneys; 4 were consuls, and 8 had been medical directors of life insurance companies.

THE NOTABLE DEAD.—Among the more prominent dead of the year are:

Sarah Read Adamson Dolley, Elizabeth Blackwell and Emily Blackwell, pioneer women physicians of America.

Wharton Sinkler, Philadelphia, neurologist.

Fred Byron Robinson, Chicago, anatomist and research worker.

Edward Champe Carter, U. S. Army, health commissioner of Manila and member of the Opium Commission.

Howard Taylor Ricketts, Chicago, research investigator, a martyr to science.

Herbert Leslie Burrell, Boston, ex-president American Medical Association, surgeon, educator.

Henry Granger Piffard, New York City, specialist on diseases of the skin and genito-urinary system.

Alexander Johnson Stone, St. Paul, surgeon-general of Minnesota, surgeon and gynecologist.

William James, Cambridge, Mass., psychologist and psychic research worker.

James Nevins Hyde, Chicago, specialist on skin and venereal diseases.

Carey Kennedy Fleming, Denver, gynecologist.

DeForest Willard, Philadelphia, orthopedic surgeon.

John Veitch Shoemaker, therapeutist, former surgeon-general of Pennsylvania.

Carl Svantè Nicanor Hallberg, Chicago, pharmaceutical publicist, editor and teacher.

Frederick Holme Wiggin, New York City, prominent in state organization.

Nathaniel Pendleton Dandridge, Cincinnati, surgeon and teacher.

Landon Brame Edwards, Richmond, Va., sanitarian, editor and teacher.

Christian Archibald Herter, New York City, investigator and chemical pathologist.

John Cummings Munro, Boston, surgeon and clinician.

CLEAN MILK PRODUCTION

It is well known that milk is commonly produced under conditions that are less hygienic and cleanly than those under which any other food article or beverage is produced.[1] Credit for recent improvement in this respect is due in part at least to the activity of milk commissions, who make contracts with milk-producers to produce milk for infants and invalids under certain prescribed conditions and who in turn have their milk certified. The amount of certified milk produced is but a small fraction of the total supply, but in spite of this the moral influence of milk commissions has been a large factor in bringing about an improved general supply.

It has been demonstrated that milk produced under rigorous conditions of cleanliness and care, coupled with prompt cooling, will keep sweet for a long time. This is explained by the fact that milk decomposes only when germs are present, and with the production of milk with a low bacterial content the keeping qualities are enhanced proportionally, especially when kept at a temperature below 40 F. Heinemann says that unfortunately heretofore certified milk has been produced at little or no profit, chiefly because of lack of demand and the higher price charged for it. It is generally marketed by dairies with considerable capital and occasionally from philanthropic motives, so that it is a belief among the ordinary producers that only a rich man or a crank will attempt to produce it. He believes that this is a misconception; that clean milk can be produced advantageously, and that even certified milk can be produced with a small outlay of money. He cites the instance of a dairy in Wisconsin which markets in Chicago, 100 miles away, milk with a bacterial content of less than 2,000 bacteria per cubic centimeter—in many instances less than 1,000—which returns a fair profit on the investment with milk at six cents a quart in bottles at the farm. This dairy has only thirty cows and produces 250 quarts of milk a day. It has been fitted up with the equipment and supplies of a modern sanitary dairy—cement floors, stalls and stanchions, water-supply, washing and sterilizing machines, bottling machine, bottles, cooling apparatus, pails, cans, etc.—for less than $1,650. There is abundant light and ventilation in the stables, and every detail of clean milk production is carried out rigorously.

Dr. Heinemann believes that this example forms a justifiable basis for the assumption that certified milk can be produced with a small investment at a profit if the

1. Heinemann, P. G.: Hoard's Dairyman, Nov. 18, 1910.

owner or superintendent will look after each detail with proper care and intelligence, and that for the production of a milk of exceptional cleanliness and quality, even if not up to the standard of certified milk, a much smaller investment than the estimate given would be sufficient. On account of the interest aroused by sanitarians and scientists in this subject, the public will soon demand of all milk-producers milk of this standard.

Current Comment

INDEX IN THE TWENTY-SEVENTH NUMBER

The last half of 1910 contained twenty-seven Saturdays. The last volume of THE JOURNAL, therefore, contained twenty-seven issues. As a result, our readers have received more than the usual amount of good reading, if we may be permitted to say so. Another result—one which we had not anticipated—is the receipt of a number of letters similar to the following, quoted from one: "As I failed to receive the index which has always accompanied the twenty-sixth number of each volume of THE JOURNAL, and as I value my files very highly and am anxious that all my bound volumes shall be complete, I trust you will pardon me for inquiring whether it was an oversight in my case or whether the index has been omitted from this volume." Of course, by this time, all of these valued readers have had their anxiety allayed by the arrival of the twenty-seventh issue—that of Dec. 31, 1910. We are not altogether sorry over their temporary disappointment, because it has served to bring a number of appreciative letters on the value of the index.

A CITY'S LIABILITY FOR TYPHOID FEVER

An interesting decision on the question of the liability of a municipality for typhoid infection through defective water supply is abstracted in our Medicolegal Department in this issue. This is a most important and far-reaching decision; we hope to comment on it editorially next week.

THE COMMISSION EVIL

The secret division of fees between surgeons and family physicians has recently given rise to considerable sensational discussion in the newspapers. From the degree of surprise manifested in these articles, one might be led to believe that the existence of this evil in the profession has not heretofore been suspected by the public. If this is true, it is because the frequent warnings of physicians on this point, in both medical meetings and medical journals, have been ignored. The records of the American Medical Association, as well as those of many other medical organizations, will show that the payment of commissions for patients —for that is what the division of fees practically amounts to—has been repeatedly and unsparingly condemned. Since the regulation of the acts of individual members lies with the local society, rather than with the state or national organization, this question must necessarily be dealt with by county societies, many of which have denounced this practice in the past, as, from time to time, we have had occasion to note. This week we present the report of a special committee of the Erie County (N. Y.) Medical Society[1] on this subject. This committee was appointed nearly a year ago and has made a long and careful investigation of conditions. Its report, therefore, may be regarded as one worthy of notice, and for this reason we are glad to reproduce it. This committee has taken up the question calmly but fearlessly, as should be done by every county society in which there is a suspicion of the existence of this evil. The full light of publicity, not only professional but general, should be turned on all those who adopt such methods.

NOT MORE BUT BETTER-EQUIPPED MEDICAL COLLEGES NEEDED

Attention has repeatedly been called in these columns to the superabundance of medical colleges in this country and also to the general need for those which were better equipped, better conducted and better financed. Many improvements in this respect have been brought about by the merging of two or more colleges, thereby forming in each instance one college, which was invariably stronger and better equipped. Improvements by this process of merger are still being rapidly brought about. During the last year twelve colleges merged their interests, whereby six better-equipped and stronger colleges resulted. Two of these mergers were in Chicago. But the possibilities of obtaining better colleges by the merger of weaker ones are still numerous and could be brought about without a serious reduction in the number of colleges. The merger of two or more of the medical schools in Chicago or in other localities is probably the most important step that could be taken in the solution of the local educational problem. It is hoped, therefore, that reports of actual accomplishment will follow the rumors which come to us of proposed mergers in several places.

THE USE OF ULTRAVIOLET RAYS FOR STERILIZING WATER

The germicidal action of light, particularly the ultraviolet rays, on bacteria has long been known and has been already to some degree practically utilized. One of the latest applications is the exposure of polluted water to the ultraviolet rays from a quartz-tube mercury-arc lamp of the "Westinghouse-silica" type. The method is based on experiments carried out in Paris in the laboratories of the Sorbonne. Its bactericidal efficiency has been demonstrated by repeated tests on water containing large numbers of *Bacillus coli* and other microorganisms. The apparatus employed is very simple, consisting essentially of a trough or box provided with baffle-plates through which the water is run in close proximity to one or more of the sterilizing lamps. It is necessary, of course, to clarify a turbid water before treatment to insure adequate penetration. An ultra-

1. Department of Medical Economics, page 59.

violet ray plant has recently been installed as the result of a competitive test at Marseilles, France, a city long scourged with typhoid fever. The cost of this mode of sterilization is said to compare favorably with that of the ozone process.

AN AMERICAN CONGRESS ON MEDICAL EDUCATION

During the week of February 27 to March 4, 1911, several organizations interested in medical education and medical licensure will meet in Chicago. The Council on Medical Education and the National Legislative Council of the American Medical Association will hold their second joint conference March 1 to 3; the Association of American Medical Colleges holds its session February 27 and 28 and the National Confederation of State Medical Examining and Licensing Boards meets February 28. Since these organizations are all working toward the same end it is indeed encouraging to know that they are thus getting closer together. Working in harmony, they can exert most effective influence for good.

Medical News

ALABAMA

Personal.—Dr. E. Marion Mason, Montgomery, resigned as state bacteriologist and pathologist, December 1, and has moved to Birmingham.——Dr. Robert Nelson was elected president of the Education and Aid Association of the Birmingham Health Department at the annual meeting, December 16.

Society Meetings.—At a meeting of the Calhoun County Medical Society at Anniston, December 6, Dr. B. Dudley Williams, Oxford, was elected president; Dr. Erastus T. Barker, McFall, vice-president; Dr. Irwin P. Levi, Anniston, secretary for three years; Dr. Edmunds C. Anderson, Anniston, treasurer for three years; Dr. Robert L. Hughes, Choccolocco, county health officer for two years; Dr. William Y. White, Anniston, city health officer for two years, and Dr. William H. Kinnebrew, Piedmont, censor for five years.—— At the annual meeting of Jefferson County Medical Society, held in Birmingham, December 5, Dr. James S. McLester, Birmingham, was elected president; Dr. Sidney H. Mann, Ensley, vice-president; Dr. Henry N. Rosser, Birmingham, county health officer for two years; Dr. Robert H. Hamerick, Birmingham, county physician; Dr. George Stubbins, assistant county physician; and Dr. Frank A. Lupton, Birmingham, censor for five years (reelected).

ARIZONA

Examination of School Children.—The first systematic medical examination of school children in Arizona has been inaugurated in Bisbee. The pupils of all schools of the district will be given thorough medical examination by the city health officers.

New Chief Surgeon.—Dr. Winfred Wylie, Phoenix, has been made chief surgeon of the Arizona Eastern Railway lines, vice Dr. George E. Goodfellow, Tucson, deceased. The headquarters of the chief surgeon will be moved at once from Tucson to Phoenix.

Medical Society Organized.—At a meeting for organization of the medical fraternity of Gila County, at Globe, recently, the Gila County Medical Society was organized. Dr. John Bacon, Miami, was elected president; Dr. Roderick D. Kennedy, Globe, vice-president; and Dr. John L. Wales, Globe, secretary-treasurer. Dr. Joseph N. McCormack, Bowling Green, Ky., was present, and addressed the meeting.

CALIFORNIA

Plague Prevention.—During the week ended November 12, 1,450 acres of land in Contra Costa County were covered with poison, the work being done in connection with making a squirrel-free zone around the cities on San Francisco Bay.

Personal.—Dr. George M. Bumgarner, Bakersfield, has been appointed health officer of Kern County, vice Dr. William S. Fowler, removed to Los Angeles.——Dr. Charles E. Stone, Marysville, superintendent of the Yuba County Hospital, is reported to be critically ill.——Dr. Edmund O. Sawyer has been appointed health officer of Los Angeles County, vice Dr. Owen R. Stafford, term expired.

Tuberculosis Notes.—Eight citizens of Riverside have given $100 each to start a sanatorium at the foot of Box Springs Mountains for persons afflicted with tuberculosis.——The Free Clinic for Tuberculosis Patients has leased new quarters at 527 Seventeenth St., Oakland, and the new clinic was opened for patients December 6. The offices of the Alameda County Society for the Study and Prevention of Tuberculosis will also be moved to the new location.

Illegal Practice.—Lee Tie Bong, a Chinaman, was found guilty of practicing medicine without a license in San Francisco and fined $100.—Chan Toa, who advertised himself as a doctor, was fined $100 for practicing medicine without a license.——F. J. Lewzy, Mrs. May White and J. J. Leek, prosecuted by the California State Medical Board, and charged with the illegal practice of medicine, are said to have been found guilty and sentenced to pay a fine of $100 each.

County Societies Elect.—At the annual meeting of Sonoma County Medical Society, held in Santa Rosa, December 5, the following officers were elected: resident, Dr. J. Walter Seawell, Healdsburg; vice-president, Dr. Reuben M. Bonar, Santa Rosa; secretary, Dr. Jackson Temple, Santa Rosa; treasurer, Dr. Fredd O. Pryor, Santa Rosa; and censor, Dr. Joseph W. Scamell, Windsor.——San Mateo County Medical Society, at its annual meeting in Belmont, elected the following officers: president, Dr. Franklin M. Seibert, San Mateo; vice-presdents, Drs. Archibald L. Offield, Burlingame, and Charles F. McCarthy, San Mateo; and secretary-treasurer, Dr. Wood C. Baker, San Mateo.

GEORGIA

Students Contribute to Fund for Alma Mater.—The student body of the Medical College of Georgia, Augusta, has made a contribution of $1,620 toward the fund which is being raised for the improvement of the institution.

Small-Pox Epidemic Subsides.—The epidemic of small-pox in Coweta and Meriweather Counties along the lines of the A. B. and A. Railroad has practically ended, thanks to the painstaking labors of Drs. Andrew J. Mann, Alvaton; William P. Ellis, Oakland, and Robert B. Gilbert, Greenville, county health officer, with the cooperation of the local authorities.

New Society Officers.—At the annual meeting of the Eleventh District Medical Society, held recently in Valdosta, the following officers were elected: president, Dr. Alexander G. Little, Valdosta; vice-president, Dr. Henry C. Whelchel, Douglas, and secretary-treasurer, Dr. William E. Miller, Eastman. The next meeting will be held in Eastman in June, 1911. ——The South Georgia Medical Association held its annual meeting in Cordele, December 7, and elected the following officers: president, Dr. Arthur R. Heyward, Warwick; vice-president, Dr. J. S. McKenzie, Cordele, and secretary-treasurer, Dr. T. E. Bradley, Cordele (reelected).———Bartow County Medical Society, at its annual meeting in Cartersville, December 14, elected the following officers: president, Dr. Robert I. Battle, Cartersville; vice-president, Dr. Tanner Lowry, Euharlee; secretary-treasurer, Dr. Howard E. Felton, Cartersville; censors, Dr. Alfred B. Greene and Alfred T. Calhoun, both of Cartersville, and delegates to the state society, Drs. Alfred B. Greene, Cartersville, and Ward Redwine, Cassville.——Fulton County Medical Society, at its annual meeting, December 15, elected the following officers: president, Dr. Edgar G. Ballenger; vice-president, Dr. L. Benjamin Clarke; secretary, Dr. Richard R. Daly (reelected); treasurer, Dr. Arnold H. Lindorme (reelected); and censor, Dr. Frederick G. Hodgson, all of Atlanta.

ILLINOIS

Personal.—According to the *Bulletin of the Illinois State Board of Health* for December, there are six physicians in the Forty-Seventh General Assembly: Drs. John H. Gray, Morrison, and James A. Womack, Equality, in the Senate, and Drs. James M. Bell, Rochester; I. N. Martin, LaHarpe; W. E. Stedman, Sullivan; and Hall Whiteaker, Mound City, in the House of Representatives.——Dr. J. H. Bacon, Peoria, was operated on for appendicitis at the Proctor Hospital, December 29, and is recovering nicely.

INDIANA

Ill and Injured.—Dr. W. W. P. McMillen, Decatur, slipped on an icy pavement, December 20, breaking his left arm.——Dr. R. W. Hurt, Indianapolis, fell December 3, fracturing his right leg.——Dr. Charles M. Coggins, Coal Creek, who has been seriously ill, is reported to be convalescent.——Dr. John H. Rerick, LaGrange, who has been seriously ill, is reported to be convalescent.

Pure Food Law in Indiana.—The enforcement of the pure food law in Indiana was much in evidence last week. In Indianapolis tests made in the food and drug laboratory of the State Board of Health, of several prepared breakfast foods of different brands, showed that packages marked 1 pound net contained only 10 ounces. A grocer in Indianapolis was arrested for adding water to oysters which he sold. In Terre Haute 10,000 bottles of tomato catsup from one establishment and 6,000 bottles and 340 gallon jugs from another establishment were seized. This catsup contained decomposed vegetable matter, and is said to have been made by a Cincinnati firm from refuse of canning factories.

Personal.—Dr. Thomas L. Taylor, Indianapolis, has been appointed house physician at the Indiana School for Feeble-Minded Youth.——Dr. E. E. Dougherty, a member of the staff of the Indianapolis City Dispensary, has resigned, under the new rule of the city board of health that no intern at the dispensary can be employed in any other capacity, and has been succeeded by Dr. John C. Irwin, Frankfort, Ind.——Dr. Hugh M. Hall, Camden, suffered the loss of his home and office in a fire, December 17.——Dr. Kent K. Wheelock, Fort Wayne, has returned from Europe.——Dr. Asa W. Brown, Bluffton, has been appointed secretary of the Wells County Board of Health, vice Dr. Louis Severin, Bluffton, resigned.——Dr. William A. Wildman has been appointed a member of the pension board of Butlerville, vice Dr. Green, deceased.

Preliminary Medical Curriculum.—President W. A. Mills of Hanover College; President Francis J. McConnell, DePauw University; Vice-President O. P. Kinsey, Valparaiso University; Prof. Stanley Coulter, Purdue University; Acting Vice-President M. E. Crowell, Franklin College; Dean M. B. Thomas, Wabash College; Dr. R. E. Lyons, Indiana University; and Vice-President T. A. Crumley, University of Notre Dame, met with the State Board of Health at Indianapolis, December 22, to establish a preliminary medical curriculum for the various state institutions. The regular amount of entrance work suggested was at least eighteen college months and should presuppose fourteen units of training in high schools or other preparatory institutions. The designation of special studies was referred to a committee for decision. The uniformity of courses offered by Indiana commissioned high schools was approved.

Society Meetings.—At the annual meeting of the Lake County Medical Association, held in Hammond, December 8, Dr. Edward E. Evans, Gary, was elected president; Dr. George W. Miller, Hammond, vice-president; Dr. Charles A. DeLong, Gary, secretary; Dr. George E. Miller, East Chicago, censor; and Dr. William F. Howat, Hammond, delegate to the state society.——The Fort Wayne Academy of Medicine held its annual meeting, December 9, and elected the following officers: president, Dr. Cecil C. Kimmel; vice-president, Dr. Homer E. Glock; secretary, Dr. Irvin W. Ditton; treasurer, Dr. Alfred L. S. Kane; and censors, Drs. John E. McArdle, Willis W. Carey and Allen Hamilton.——Laporte County Medical Association, at its annual meeting, December 9, elected Dr. Jesse B. Rogers, Michigan City, president; Dr. John N. Kelly, Westville, vice-president; Dr. George R. Osborn, Laporte, secretary and delegate to the state society; Dr. Edward G. Blinks, Michigan City, treasurer, and Dr. Benjamin W. Hollenbeck, Westville, censor.——Dearborn County Medical Society, at its annual meeting in Lawrenceburg, December 20, elected Dr. Jesse L. McElroy, Aurora, president; Dr. George W. Hansell, Guilford, vice-president; Dr. Orville S. Jaquith, Lawrenceburg, secretary; and Dr. Arthur T. Fagaly, Lawrenceburg, treasurer.

KANSAS

County Society Meeting.—The Republic County Medical Society met in Belleville, November 17, and elected Dr. William Kamp, Belleville, president; Dr. John B. Henry, Scandia, vice-president, and Dr. Jay C. Decker, Belleville, secretary.

Personal.—Dr. Allen W. Dortch, Arkansas City, was painfully injured in a runaway accident, December 5.——Dr. Josaphyne R. E. Davis, Ottawa, is reported to be critically ill in University Hospital, Kansas City, with septicemia due to an operation wound.

To Remain at Rosedale.—The regents of the University of Kansas are reported to have decided to retain the medical school property at Rosedale. The reorganization contemplates the establishing of a teaching hospital in Kansas City, Kansas, and the employment on salaries of additional capable instructors. Dr. Samuel J. Crumbine, Topeka, Secretary of the Kansas State Board of Health, has been elected dean.

Alumni Organize.—At the annual meeting of the Alumni Association of the Medical School of the University of Kansas, held recently, the following officers were elected: president, Dr. George M. Gray, Kansas City, Kan.; vice-president, Dr. Marion Truehart, Sterling, Kan.; secretary, Dr. Harold P. Kuhn, Kansas City, Mo.; and executive committee, Drs. Clifford C. Nesselrode, Kansas City, Kan., and Logan Clendening, Kansas City, Mo.

MARYLAND

Limit Professors' Salaries.—The authorities of the University of Maryland have limited the salary of medical professors to $1,500 per annum.

Personal.—Dr. Augustine S. Mason, Hagerstown, is reported to be critically ill.——Dr. Frederick Taylor, Baltimore, is in University Hospital, suffering from fractured ribs as the result of a fall on the ice.——Dr. Howard A. Kelly, Baltimore, has gone to Mexico for a month.

For the Colored Insane.—The board of managers of the State Hospital for Colored Insane has purchased 561 acres of land near Crownville, Anne Arundel County, as a site for that institution. The remainder of the legislative appropriation will be employed in the erection of the necessary buildings.

Bequests.—By the will of Miss Ada George, the Nursery and Child's Hospital, and the Church Home and Infirmary, Baltimore, each receives bequests of $1,000.——The late Edgar G. Miller left $2,000 to the Baltimore Eye, Ear and Throat Charity Hospital.——Hebrew Hospital has been bequeathed $1,000 by the will of the late Joseph Fredenwald.

Medical Society Meeting.—Dorchester County Medical Society met in Cambridge, December 13, adopted a new constitution, and elected the following officers: president, Dr. C. Frank Maguire, Hurlock; vice-president, Dr. Edward L. Jones, East New Market; secretary-treasurer, Dr. William H. Houston, Fishing Creek, and censors, Drs. John Mace, Cambridge, E. A. Jones and Joseph K. Shriver, Jr., Taylor's Island.

MICHIGAN

Lapeer Quarantine Temporarily Raised.—The quarantine against the Michigan Home for the Feeble Minded, Lapeer, was raised December 22, as there have been no new cases of small-pox in the institution in four weeks. The expense of the state troops on duty at the institution as a quarantine guard amounts to $5,373. On December 28, the institution was again placed in quarantine on account of the occurrence of another case of small-pox.

Academy Election.—At the annual meeting of the Kalamazoo Academy of Medicine, held December 13, the following officers were elected: president, Dr. John H. Crosby, Otsego; vice-presidents, Drs. H. L. Stewart and Lemuel E. Clark, Otsego, and Francis C. Penoyer, South Haven; secretary-treasurer, Dr. Charles E. Boys, Kalamazoo; censors, Drs. Adolph Hochstein, Edward P. Wilbur and George F. Inch, Kalamazoo; librarian, Dr. Edward J. Bernstein, Kalamazoo; delegates to the state society, Drs. Wilbur F. Hoyt, Paw Paw, and William A. Stone, Kalamazoo; and alternates, Drs. J. Charles Maxwell, Paw Paw, and John B. Jackson, Kalamazoo.

Deaths of Children in Detroit.—An investigation of the alleged incorrectness of the recent statement of the Census Bureau, of the proportion of deaths of infants in Detroit, as published in the official bulletin on mortality statistics for 1909, has been made by Dr. Cressy L. Wilbur, chief statistician of the bureau, acting in conjunction with the representatives of the secretary of state of Michigan. Subsequent to the issuance of the bulletin, the Detroit health authorities claimed that only 20 per cent. of the deaths at all ages in 1909 was of infants under 1 year, notwithstanding the fact that the census compilation gave a ratio of 29 per cent. Some local papers and the city health authorities of Detroit insisted that the bureau's figures were incorrect and injurious. After a thorough inquiry, Dr. Wilbur reports that the Detroit health authorities now admit that the census figures are correct, and that errors in the local compilation made it appear that 20 per cent. was the proper proportion. The health officer of Detroit has undertaken to reform the system in his office so that results hereafter will be strictly comparable with those of the Census Bureau.

NEW YORK

Sale of Red Cross Seals.—The manager for the sale of the Red Cross seals throughout the state reports that the sales outside of New York City and Buffalo will amount to at least $75,000, which is three times the amount of the sales of last year.

Drink Wood Alcohol.—It is reported from Kingston, N. Y., that wood-alcohol drinking has reached such proportions among the laborers on the New York Aqueduct that several deaths and numerous cases of severe illness have occurred. Efforts will be made to educate the men in regard to the dangers of this drug.

New York City

Label Milk for Infants.—A set of resolutions drawn up at the milk conference held on December 2 and 3 states that of the 16,000 babies that die annually in New York City, 4,000 are killed by bad milk and improper food, and that the most important problem connected with securing safe milk for infants is that of securing the proper labeling of milk so that mothers will know what is safe.

Would Make Vaccination Optional.—A complaint was recently brought against a resident of Staten Island charging him with violating the compulsory education law because he kept his children from school rather than submit them to vaccination. The case was decided in favor of the defendant and it is rumored that it will be made the basis of a campaign against compulsory vaccination. It is planned to make a demand that the Board of Education establish five schools, one in each borough, where vaccination may be optional according to the inclinations or beliefs of the parents. The bill providing that vaccination be made optional which was defeated at the last session of the legislature will be presented at the next session.

Hospital Interns Meet.—The first regular clinical meeting of the Society of Hospital Interns of New York City was held in St. Luke's Hospital, December 19. After reports of cases by seven interns, a general discussion followed on the clinical methods pursued at the different hospitals. Dr. Nathaniel Bowditch Potter, visiting physician to the City Hospital, and the originator of the idea of organization among interns, delivered an address on the purpose, scope and advantages of the society, in which he spoke of the immense value of such a society, not only to its members but to the profession in general, also of the spirit of rivalry that would obtain and the cooperation and unanimity essential among hospital interns, and the diffusion of new ideas that its meetings are bound to promote.

OHIO

Columbus Practitioners' Society Meets.—At the annual meeting of the General Practitioners' Society of Columbus, December 8, Dr. Emma O. Jones was elected president; Dr. Harry E. Myers, vice-president; Dr. Albert S. Barnes, secretary, and Dr. Charles H. Wells, treasurer.

Gift to Hospital.—Announcement was made, December 15, of a donation of $100,000 to the Babies' Dispensary and Hospital Association, Cleveland, by Mr. and Mrs. J. H. Wade, the only condition being that a memorial tablet to Mr. Wade's mother be placed in the new dispensary which is being erected by the association.

Tuberculosis Notes.—A tuberculosis sanatorium has been incorporated at Hamilton with a capital of $20,000.——A bureau of tuberculosis has recently been established in the health department of Cleveland, of which Dr. Robert H. Bishop is chief. Five tuberculosis dispensaries are being maintained in the city, each having its own salaried physician.

Personal.—Dr. William T. Lindsay, Cincinnati, has been appointed physician of Hamilton county jail, vice Dr. Louis J. Feid, resigned.——Dr. Joseph W. Chetwynd, assistant physician at the Massillon State Hospital, has resigned and will practice in East Liverpool.——A dinner was given in Cleveland, December 15, to Dr. Giovanni A. Barricelli, by 150 Italian-American citizens in celebration of the physician's recovery from a critical operation.——Dr. Sherman E. Simmons, Norwalk, is reported to be convalescent after a long illness.——Dr. Adam L. Jackson, Zanesville, who has been ill with cerebral hemorrhage, is reported to be improving rapidly.——Dr. William W. Smith, Portsmouth, who sustained a fracture of the arm recently, has resumed practice.——Dr. James F. Madden ,Toledo, sailed for Europe, December 21.

PENNSYLVANIA

To Compel Birth Reports.—In order to enforce the statute requiring a report of all births, the State Health Department caused the arrest of five physicians of Pittsburg, who were held in $500 bail for court, and action is threatened against 100 others. Dr. James F. Edwards, registrar of vital statistics, says that physicians have been disregarding this statute for several years. In many cases, when burial certificates were asked for children, no certificate of birth could be found by the health department.

Philadelphia

Personal.—Dr. S. Weir Mitchell, who has been a trustee of the University of Pennsylvania since 1875, has resigned.——Arthur R. Cushny, M.D., F.R.C.S., professor of pharmacology in the University of London, will deliver the first of the series of "Weir Mitchell Lectures" at the Weir Mitchell Hall in the College of Physicians on January 17. His subject will be "Heart Irregularity from Auricular Fibrillation."

Death Rate in 1910.—With the exception of 1908 and 1909, the death rate in this city in 1910 was the lowest in the history of the community. The total number of deaths reported was 26,879 and the rate of mortality 17.35 per 1,000 population. In 1908, the rate was 17.17 per thousand population, and in 1910, 16.40 per 1,000 population; 1909 holding the record as determined by the Bureau of Statistics.

First Branch of Free Medical Library Opened.—A medical section of the Free Library at Lehigh Avenue and Sixth Street was opened during the last week in December. A selection of modern text-books, made by the Library Committee of the Philadelphia County Medical Society, is in place on the shelves and current numbers of the best medical journals are on the tables. The committee has likewise in hand a nucleus of a similar collection for the new Southwark Branch Library, now under construction.

GENERAL NEWS

Small-Pox on Transport.—News was received at San Francisco, December 27, of an outbreak of small-pox on the transport *Logan* en route from Honolulu to the Philippine Islands.

Hygienists to Meet.—The fifth Congress of the American School Hygiene Association will be held at the Academy of Medicine, New York City, February 2 to 4, under the presidency of Dr. Luther H. Gulick, New York City.

Prevention of Blindness.—At a meeting of physicians and laymen in New York, December 17, the National Association for the Prevention of Blindness and the Conservation of the Eyesight was formed. Dr. F. Park Lewis, Buffalo, was elected chairman of the board of directors.

Proctologic Society Prize.—The American Proctologic Society announces that the sum of $100 will we awarded to the author of the best original essay on any disease of the colon, by a graduate or senior student of any medical college in the United States, not a member of the society. Essays must be submitted to the secretary of the committee, Dr. Lewis H. Adler, Jr., 1610 Arch Street, Philadelphia, before May 10. Each essay must be typewritten, designated by a motto or device without signature, and must be accompanied by a sealed envelope haying on the outside only the motto or device contained on the essay, and within, the name and address of the author and motto or device used on the essay. The committee reserves the right not to make the award if no essay considered worthy of the prize is submitted. The object of the prize and competition is to stimulate increased interest in and knowledge of proctology.

FOREIGN NEWS

British-American Hospital for Chile.—The site has been secured and plans are under way for the construction of a hospital at Valparaiso, Chile, by the British and American colonies. The hospital is to cost up to $50,000, and is intended to be modern in every respect.

The Netchaeff Festschrift.—The issue of the *Russkiy Vrach* of November 25 is a special *Festnummer* of 175 pages in honor of Dr. A. A. Netchaeff's continuous service for twenty-five years as chief of the Obuchow general hospital at St. Petersburg. It contains forty-seven articles from the internists and surgeons connected with the hospital and the proceedings for the last two years of the association of hospital physicians.

Cholera Passes the Hundred Thousand Mark.—The entire issue of the *Russkiy Vrach* of December 3 is devoted to articles on cholera and the great epidemic in Russia this year. The

disease had caused 100,679 deaths by that date according to the official register. The distribution, mode of spread, healthy carriers, treatment and other aspects of the problem are discussed in detail, with especially minute study of conditions at St. Petersburg. The epidemic is dying out.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Dec. 16, 1910.

The Discovery of Carbon-Monoxid Poisoning Long After Death

On May 11 occurred at Whitehaven one of those mining disasters which from time to time send a thrill of horror through the country: 136 men and boys lost their lives. An explosion occurred and the mine caught fire. After all attempts at rescue failed, the affected parts were bricked up to prevent the fire from spreading. Five months afterward the bodies were found, most of them being much decomposed. Specimens of liver and heart were sent to a physiologist for examination with the result the spectroscope showed that in 35 cases death was due to poisoning by carbon monoxid. This constitutes a record in the length of time for the detection of carbon-monoxid hemoglobin. In many of the other bodies it was supposed that death was due to the same cause but that the carbon monoxid was dissociated by heat and bacterial agency.

The Health of the Navy

The annual statistical abstract of the health of the navy for the year 1909, which has just been issued, shows a continuous improvement in the general health of the fleet as compared with the preceding five years. Not only are the case, invaliding, and death ratios lower than the average for the preceding five years, but the average loss of service for each person has again dropped, from 10.8 to 9.76 days. The total force in the year 1909 was 112,700 and the total number of cases of disease and injury was 72,540, which gives a ratio of 643.65 per thousand, a decrease of 75.34 as compared with the average for the preceding five years. The total number invalided was 2,007, which gives a ratio per thousand of 17.8, a decrease of 4.3 in comparison with the average of the preceding five years. The total number of deaths was 362, giving a ratio of 3.21 per thousand, a decrease of 0.54 in comparison with the average of the preceding five years. Two hundred and fifty-eight were due to disease and 104 to injury. The number of days' loss of service due to venereal disease was 325,889, while the average daily number of men ineffective from these diseases was 892, as compared with 889 in 1908 and 903 in 1907.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Dec. 16, 1910.

Personal

The professors of the Paris medical college have just nominated Dr. Dejerine, professor of medical pathology, to the clinical chair of diseases of the nervous system at the Salpêtrière. This position, once made notable by Charcot, was recently occupied by Professor Raymond, who died last September. Professor Dejerine is to-day about 55 years old. He was a pupil of Vulpian, and, from the beginning of his career, specialized in diseases of the nervous system. His scientific work in this domain is of considerable extent, and his books on myopathy, neuritis, tabes, and motor and sensory spinal localizations, have brought him a great reputation. In collaboration with his wife, Mme. Dejerine-Klumpke, he has published an "Anatomy of the Nervous Centers," and in collaboration with Dr. Thomas, a work on diseases of the spinal cord, which appeared in Brouardel and Gilbert's treatise on medicine and therapeutics.

The House Where Pasteur Was Born

The municipality of Dôle, Jura, has just voted to buy and preserve the house where Pasteur, on Dec. 27, 1822, was born. It has decided, moreover, to ask the aid of "all of the admirers of that great benefactor of humanity."

Feminine Candidacy for the Academy of Sciences

In consequence of the candidacy of Mme. Curie for the place of M. Gernez in the section of general physics of the Académie des sciences, some members of the various academies composing the Institut de France (the Académie de médecine is not a part of the institute), influenced by the possibility of a precedent, have petitioned these academies to lay the question before the central commission. The petition has aroused a very warm discussion on the part both of the defenders and of the adversaries of feminine candidacy. The idea of complete solidarity among the various academies which compose the institute has been defended against the theory of the entire autonomy of each academy. The fact has been especially emphasized that the election of a member to one of the five academies carries with it the title of member of the institute, and that in accepting feminine candidacy, the Académie des sciences runs the risk of sometime admitting a woman to the presidency of the institute, that is to say, of all the academies, even of those opposed to the admission of women. Failing to agree, the commission decided to send the petition to the administrative commissions of each of the five academies for their advice, and then to lay the question before the five academies assembled for the trimonthly joint session, which will be held in January.

In this connection it is not without interest to note that the section of chemistry of the Royal Academy of Science of Stockholm has just decided unanimously to elect Mme. Curie as a foreign member in place of the Italian savant Cannizzaro, deceased.

Resolution in Regard to the Premature Publication of New Remedies

In the course of its last session the Association des journalistes médicaux français passed the following resolution: "Considering the real danger presented by premature publication of new remedies, the association regrets the haste with which incomplete ideas relative to such remedies are placed before the public in the lay press."

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Dec. 9, 1910.

Personal

Privy Councillor Prof. Kirchner of the Prussian department of education has been chosen to fill the place of Robert Koch in the board of directors of the Robert Koch foundation for the campaign against tuberculosis.

As a result of the founding of an institution for research under the auspices of the Kaiser, which I reported to you in connection with the centennial of the Berlin university, he has received the honorary degree of doctor from the medical faculty of the university of Prague.

Leyden Lectures

As a permanent honor to its founder, who was also for many years its honorary president, the Verein für innere Medizin und Kinderheilkunde of Berlin resolved, on motion of Professor Schwalbe, to establish a Leyden lectureship, the lecture to be given annually at the first session of the winter semester, by a speaker selected by the board of directors. This arrangement, which follows the English custom, is the first of the kind made in Germany. A large fee will be paid the lecturer, derived from the interest of the fund of $14,000 (56,000 marks), established on the seventieth birthday of von Leyden. The rest of the interest on the fund is to be devoted to scientific research under the influence of the society for internal medicine (Verein für innere Medizin), as the president of the society is also president of the fund.

Strike of Contract Physicians at Halle

A short time ago a difficulty arose about fees between the management of the local sick insurance societies in Halle and their medical appointees, and the Leipsic league forbade any supply to the societies by other physicians. As the insurance societies on this account were unable to supply proper medical aid, the city government on the authority of the social insurance law deprived the insurance officials of their office and took over the management of the bureau. A contract has now been concluded between the city government and the insurance physicians, which meets the demands of the physicians. This affords new evidence of the power of the Leipsic league backed by the German medical profession.

This affair will doubtless tend to make the legislators, who are still busy with the new imperial insurance law, more careful to avoid conflict with the entire medical profession. The management of the Leipsic league has issued an announcement to the effect that physicians will combine for mutual aid if the projected unfavorable provisions of the new imperial insurance bill are enacted into law.

Proposed Professional Courts of Honor for Bavaria

After repeated unsuccessful trials to establish courts of honor by law, the Bavarian medical councils have attempted to make such an arrangement themselves. According to their plan, each society shall establish an arbitration and an honor court. The arbitration court shall have jurisdiction over all the members of the district society and the court of honor over all except military surgeons during their term of service and health officers who are not engaged in practice. The arbitration court has charge of all difficulties between physicians. Charges before the court of honor can be made by any physician and in certain cases even by laymen. The members of the district society are bound to apply to the arbitration court before suing a fellow practitioner. Laymen may be called as witnesses. The penalties may consist of warnings, notices, advice to resign from the society, money fines and expulsion. At the last session of the medical councils this plan was discussed but no decision was reached.

Wholesale Poisoning from Margarine

A few days ago a wholesale poisoning was caused in a number of cities, especially in Hamburg, by the use of Backa-Margarine from an Altona factory. The chemical investigation undertaken in Hamburg and other places showed the presence of a vegetable fat not more exactly characterized. The impression has been conveyed by an advertisement of the manufacturers, which offers a reward for the discovery of the person who adulterated the product, that it was a criminal action of some appointee. On the other hand, this view does not seem to be accepted by other manufacturing firms, for they have excluded the suspected firm from their association. It is to be hoped that further investigations will clear up this very deplorable affair.

Dental Students Boycott a School

The dental department of the Breslau university has been defective in room and equipment for a long time. Demands for improvement have been repeatedly made by the faculty and in parliament without success. Now about one hundred students have boycotted the institution, refusing to attend lectures and exercises. It is to be expected that this special protest will have a good effect.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Dec. 12, 1910.

A Discussion on Salvarsan ("606") in Vienna

The frequency of syphilitic affection in the patients frequenting the Vienna Policlinic and the various other hospitals and clinics of this city has rendered the experience of our syphilologists rather extensive. Postluetic and metaluetic affections are also very frequent in this country, and all such patients flock to Vienna from all Austria and from the southeastern Slavonic and oriental states which have no nearer place whence to seek help. Thus Vienna has the advantage of seeing an enormous number of cases belonging to this group of diseases. Naturally the discovery of the powerful effects of Ehrlich's salvarsan has been followed up very quickly here, and Ehrlich has provided the Vienna hospitals with sufficient doses for the purpose.

A symposium was held recently in the two Vienna medical societies, in which the experiences gained within the few months were reported. Professor Finger's conclusions were that the remedy has a powerful and specific action; its chief indication is to be sought where a rapid action is necessary. Professor Finger cannot admit that the syphilitic process itself is influenced by it in a much better way than by the old remedies. Its harmlessness has not yet been proved; it seems to have a "neurotropic" action by sensitizing, so to say, certain nerves for the luetic toxin.

Professor Rehl has investigated the literature on bad results after injection of mercury and after salvarsan. Hitherto 40,000 injections of the latter have been made and not a single case of death could be attributed directly to the latter substance while since 1906 there are ninety cases of fatal result after mercury injection. Therefore there seems to be, in his opinion, reason for the preference of "606."

Professor Urbantschitsch has seen sixty cases of affections of the ear caused by syphilis or by salvarsan. The interesting point is that in many cases an isolated affection of the vestibular nerve, with nystagmus, dizziness and vomiting, has appeared a few days after the injection, but soon disappeared. On the other hand, inveterate luetic ear affections have improved wonderfully under "606," but it is yet a question whether the improvement will be a permanent one.

Professor Alexander has seen sixty-four cases of syphilis of the ear before the introduction of "606," among them only three in recent syphilis. Therefore the frequent appearance of ear trouble after "606" seems to show that this remedy has some undesirable effect on the auditory organs. Therefore Alexander thinks that salvarsan should be used only in inveterate cases of luetic labyrinthic dizziness and deafness.

Professor Matzenauer thinks that the remedy is very useful for obtaining rapid improvement of syphilitic symptoms, but that there is not yet a single proof that the action is a permanent one. In 3 per cent. it has failed altogether, while in five cases of lues maligna it has had in his hand a wonderful effect. Relapses appear to be frequent (8 per cent.) even in recent infections. In his opinion "606" has not only a "neurotropic" but also an "organotropic" action (fever up to 104 F., general malaise, sweating, vomiting, swelling of the syphilitic lesions.)

Dr. Oppenheim has found that the injection of the substance should be resorted to in all cases of luetic affection of the skin, the mucous membranes and the glands, which respond very quickly. Diseases of the nerves, however, were not so easily influenced and such cases could become much worse. Only if an *indicatio vitalis* was present he would, in opposition to Ehrlich, use it also in brain syphilis. The neurotropic action of the injection was well illustrated by the fact that optic neuritis has been observed by Professor Dimmer and by other ophthalmologists too, in very recent cases of syphilis treated by "606." This is a rarity and must be searched for further. Actual blindness has hitherto not been caused by "606" alone. Salvarsan seems to predispose the auditory and optic nerves to an attack by luetic toxins. Wassermann's reaction has not behaved uniformly. In some cases the reaction has disappeared within three days after the injection, and remained absent or returned after a lapse of three to six weeks or three months. In others, even a repeated injection did not make the Wassermann reaction negative. Therefore, even in this respect, the substance offers certain difficulties. It is the rule in this country to inject about 1/10 of a grain (0.007 gm.) per kilo body weight, in neutral solution preferably; intravenous injection has been recommended by Ehrlich only quite lately, and the results are said to be much better still.

Taking all the pros and cons into consideration, one is forced to admit that Ehrlich has added to the physician's armamentarium a most valuable weapon, the exact action of which has yet to be found. But in one respect it surely surpasses all other remedies. It is the best prophylactic we have at present, as Dr. Hobler said. He saw many hundreds of cases of old syphilis in Bosnia in South Austria, where the whole population may be regarded as more or less syphilitic or heredosyphilitic. He advises that all prostitutes known to the police be treated prophylactically with salvarsan. This would be, in his opinion, the safest means of eradicating the most dangerous and most frequent means of infection. If this were the law everywhere, syphilis might soon be mastered.

Marriages

BYRON F. BARKER, M.D., to Miss Mildred Todd, both of Bath, Me., December 14.

SAMUEL SALINGER, M.D., Chicago, to Miss Florence Whiteson of Philadelphia, December 26.

CLAY LLOYD NICHOLS, M.D., to Miss Effie Duckwall, both of Louisville, Ky., December 21.

SEYMOUR LEWIS HOMRIGHOUSE, M.D., to Miss Ada Gorss, both of Hagaman, N. Y., recently.

ROBERT CADE PARRISH, M.D., to Mrs. Mary Barson Garrod, both of Philadelphia, December 15.

SOREN S. WESTLY, M.D., Manly, Ia., to Miss Susie Florynce Cron of Gladbrook, Ia., December 7.

ALAN GOODWIN BROOKS, M.D., Stoy, Ill., to Miss Ruth E. Kenney of Oil City, Pa., December 17.

WILLIAM S. EHRICH, M.D., Evansville, Ind., to Miss Bertha Julrad of Louisville, Ky., December 19.

WALTER EDWIN WALKER, M.D., Graham, N. C., to Miss Carrie Stanford of Marion, N. C., December 22.

CHARLES E. SMITH, M.D., Johnson City, Tenn., to Miss Dora Kinney of Mitchell County, N. C., recently.

WILLIAM EDGAR HOLLAND, M.D., Fayetteville, Pa., to Miss Rose Viola Byers, at Harrisburg, Pa., December 23.

Deaths

Willis Goss MacDonald, M.D. Albany (N. Y.) Medical College, 1887; a member of the Medical Society of the State of New York; professor of abdominal and clinical surgery in Albany Medical College; attending surgeon and consulting surgeon to the Westfield Hospital; a member of the Albany Board of Education; one of the prime movers in the establishment of the Raybrook State Hospital for the Treatment of Incipient Tuberculosis; major and surgeon of volunteers in the Spanish-American War; died at his home in Albany, December 30, from pneumonia, aged 47.

Frederick Wilcox Chapin, M.D. College of Physicians and Surgeons, New York City, 1873; a member of the American Medical Association; consulting physician and surgeon to the Springfield (Mass.) Hospital; a member of the local pension examining board; at one time trustee of the Northampton Insane Hospital; chairman of the camp committee of the local society for the prevention of tuberculosis; died at his home in Springfield, December 16, from angina pectoris, aged 61.

William Marsh Proctor, M.D. Hahnemann Medical College, Philadelphia, 1899; of Braddock, Pa.; surgeon to the Braddock works of the American Steel and Wire Company; who was operated on in the new Homeopathic Hospital, Pittsburg, December 13, leaped from a window in the hospital, December 14, while delirious, sustaining injuries from which he died an hour later, aged 36.

Charles Merrill Bertholf, M.D. Kansas City Medical College, 1904; a member of the Kansas Medical Society; physician for the Hamilton and Fidelity Coal and Mining companies, Cherokee; died in Peabody, December 16, from the effects of morphin, self-administered, it is believed with suicidal intent, while despondent, aged 35.

William MacQuigg, M.D. Western Reserve University, Cleveland, O., 1861; assistant surgeon of the Twenty-sixth Iowa Volunteer Infantry during the Civil War; a member of the local pension examining board; died at his home in Clinton, Iowa, December 18, from cerebral hemorrhage, aged 82.

Frank Whitman, M.D. Berkshire Medical College, Pittsfield, Mass., 1863; of Bellows Falls, Vt.; surgeon of the Fifty-eighth Massachusetts Volunteer Infantry during the Civil War; died at the hospital of Dr. Henry O. Marcy, Cambridge, Mass., December 20, from arteriosclerosis, aged 75.

William H. Swander, M.D. Cincinnati College of Medicine and Surgery, 1859; for two years prosector to the chair of surgery; surgeon in the Federal service during the Civil War; for many years a resident of Washington, D. C.; died in Hampton, Va., December 11, aged 75.

Isaac H. Brewton, M.D. Medical College of the State of South Carolina, Charleston, 1886; formerly quarantine officer of Eagle Pass, Tex., and railway surgeon; died at his home in San Antonio, December 9, from septicemia, due to a carbuncle of the nose, aged 74.

Elizabeth Gallimore, M.D. Cooper Medical College, San Francisco, 1887; a member of the American Medical Association; of San Jose, Cal.; died in the Petry Sanitarium in that city, December 16, three weeks after an operation for appendicitis, aged 50.

Myron Watson Hunt, M.D. University of Vermont, Burlington, 1882; of Moreland, N. Y.; twice coroner of Oneida county, and a member of the board of education of Holland Patent; died in a hospital in Oklahoma City, December 5, from typhoid fever, aged 55.

Albert Reeder (license, years of practice, Massachusetts, 1894); was found dead in his apartments in Boston, December 25, from the effects of the inhalation of illuminating gas, aged 55. The medical examiner's decision was that the case was one of suicide.

Marquis L. Martin (license, Ind., years of practice); representative in the state legislature in 1872 and 1873; a practitioner of Indiana for 66 years; died at the home of his daughter in Rossville, December 14, from heart disease, aged 89.

J. W. F. Parker, M.D. University of Louisville, Ky., 1850; a member of the Kentucky State Medical Association; for several years president of the Pulaski County Medical Society; died at his home in Somerset, December 18, from pneumonia, aged 75.

James L. Clayton, M.D. University of Arkansas, Little Rock, 1891; representative from Concordia Parish in the Louisiana legislature from 1892 to 1896; and a member of the parish school board; died at his home in Clayton, December 23, aged 52.

Henry Parsons Terry, M.D. New York University, New York City, 1866; formerly supervisor of Riverhead, Long Island, N. Y.; and president of the Suffolk County National Bank; died at his home, December 5, from heart disease, aged 71.

Austin W. Foreman, M.D. American Medical College, Eclectic, St. Louis, 1878; of Vinita; a member of the Oklahoma State Medical Association; died in St. John's Hospital, Springfield, Mo., December 18, from disease of the stomach, aged 55.

Robert Hall, M.D. College of Physicians and Surgeons, New York City, 1856; a member of the Massachusetts Surgical and Gynecological Society; died at his home in Providence, R. I., December 13, from cerebral hemorrhage, aged 81.

Hugh L. Ferguson, M.D. Cincinnati College of Medicine and Surgery, 1869; at one time mayor of Westerville, O.; a veteran of the Civil War; died at the home of his son in Plain City, O., December 11, from osteosarcoma, aged 75.

George Scott Locke, Jr., M.D. Dartmouth Medical School, Hanover, N. H., 1900; formerly of Concord, N. H., and Fort Davis, Tex., died on his father's ranch in Jeff Davis County, Tex., November 4, from pneumonia, aged 35.

George Washington Smith, M.D. Hahnemann Medical College, Philadelphia, 1876; visiting physician to the Children's Homeopathic Hospital; died at his home in Philadelphia, Decembber 14, from heart disease, aged 67.

William S. Elliott, M.D. Vanderbilt University, Nashville, Tenn., 1883; of Langford, Port Royal, Tenn.; died in a hospital in Rochester, Minn., December 12, after an operation for cancer of the intestines, aged 54.

John Selden Parker, M.D. Medical School of Maine, Brunswick, 1849; for many years a practitioner of East Lebanon; died at the home of his son in Providence, R. I., December 18, from senile debility, aged 86.

Ludwig Wehlau, M.D. University of Würzburg, Germany, 1874; a member of the American Medical Association; died at his home in Scranton, Pa., December 23, from carcinoma of the intestine, aged 59.

Montraville Waddle (license, years of practice, Ill., 1878); for 45 years a practitioner; hospital steward during the Civil War; died at his home in Carmi, Ill., December 22, from rheumatism, aged 77.

John Burgess Gaither, M.D. College of Physicians and Surgeons, Baltimore, 1869; a member of the Medical Society of the State of North Carolina; died at his home in China Grove, December 17, aged 63.

Frank W. Rodgers, M.D. Chicago Homeopathic Medical College, 1888; a member of the Ohio State Medical Association; died at his home in Findlay, O., from nervous prostration, December 18, aged 47.

James H. Harris (license, Md., 1873); professor of operative dentistry in the Dental Department of the University of Maryland; died at his home in Baltimore, December 12, from pneumonia, aged 76.

David L. Todd, M.D. Tulane University, New Orleans, 1854; surgeon in the Confederate service during the Civil War; died at his home in Washington, La., December 15, aged 83.

John Robert Culbertson, M.D. Atlanta (Ga.) Medical College, 1883; a member of the South Carolina Medical Association; died at his home in Gray Court, December 15, aged 65.

Giles F. Roosevelt, M.D. Denver Homeopathic College, 1902; a member of the Colorado State Medical Society; died at his home in Denver, December 10, from tuberculosis, aged 36.

John R. Miller, M.D. Cleveland, O., 1854; College of Physicians and Surgeons, Keokuk, Ia., 1861; died at his home in Elvaston, Ill., December 24, from senile debility.

Luther Cochran Cook, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1863; died at his home in Ellsworth, Kan., December 19, from cerebral hemorrhage, aged 82.

Henry Vigor, M.D. Eclectic Medical Institute, Cincinnati, 1870; for 60 years a practitioner; died at his home in Brandon, O., December 11, from senile debility, aged 89.

Benjamin Hill, M.D. Ensworth Medical College, St. Joseph, Mo., 1891; died suddenly at his home in Huntsville, Wash., December 6, from heart disease, aged 68.

James Frost, M.D. University of California, San Francisco, 1877; of San Francisco; died at the home of his daughter in Sacramento, December 11, aged 74.

D. L. Whaley, M.D. Missouri Medical College, St. Louis, 1888; died at his home in Browning, Mo., December 10, from disease of the stomach, aged 60.

"The Propaganda for Reform"

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION.

THE VAN BYSTERVELD MEDICINE COMPANY

A Fraudulent Concern that Makes Fake Diagnoses by Means of Farcical Uranalyses

If it were not for the fact that self-drugging is always dangerous and that swindling people is always criminal, the study of the genus *Faker* would often be amusing. Some quacks are so naively dishonest, so frankly fraudulent, so transparently tricky that one can but stand aghast at the stupendous gullibility of the public which makes their trade a thriving one. Some medical frauds show care in conception and expertness in execution; they show, in fact, that skilled lawyers have been consulted to determine just how immoral a concern may be without becoming illegal. On the other hand there are some fakes of a medical nature which in their crudeness of operation excite disgust for their inventors and contempt for their victims.

The Van Bysterveld Medicine Co., Ltd., is a fraudulent concern with headquarters at Grand Rapids, Mich. It advertises in cheap magazines that it "will locate the cause of your aches and pains" free. All you need do is to send in a sample of your urine "stating age and sex" and they will do the rest. The "expert" who performs these marvels in diagnosis is A. W. Van Bysterveld, who, we are told, "has spent a lifetime in examining human urine."

Van Bysterveld Medicine Co., Ltd.
A. W. Van Bysterveld
Expert Inspector of
URINE
17-19-21 Sheldon Street
GRAND RAPIDS, MICHIGAN
It Is All Important
YOU SHOULD KNOW
The cause of your ailment, without which knowledge you cannot hope to get a permanent and lasting relief. The surest method of locating the primary cause of your trouble is by an inspection of the urine.
This is done by a careful and secret process handed down generation after generation and most carefully guarded by the old families of Europe. Its age alone entitles it to the confidence of all. It has stood the test of years upon years, giving at all times substantial proof of its undoubted efficacy.
Modern schools agree that disease and cause that cannot be detected in other ways, can be located by a careful examination of the urine, which discloses many secrets of the body. The kidneys acting as the drainage canal of the system carry off the waste substances and decomposed matter. These pass in the usual course through the urine where by careful inspection they are located.
A. W. VAN BYSTERVELD, the chief inspector, whose secret methods are not taught in schools, examines upon an average of 25,000 bottles of urine a year. This alone stamps him as an authority and of exceptional qualifications. In conjunction with him are the consulting physicians who prescribe the remedies. This combination assures you of a medicine that goes direct to the root of the evil.
A trial will convince the most sceptical of the value of this treatment. Bring or send a sample of urine. Tell the inspector nothing and afterwards you will repeat what is so frequently

Fig. 1.—Photographic reproduction (reduced) of the outside cover and the first page of the folder sent out by the Van Bysterveld Medicine Company.

A LETTER IS WRITTEN

A few inquiries having come in to THE JOURNAL concerning this company, it seemed worth while to make some investigation of the methods employed by the Van Bysterveld Medicine Company. Accordingly a letter from a supposititious patient was sent last March, asking for "full particulars about your cure for disease." In reply the company sent a mailing case containing a small 1-dram vial (for the urine), a leaflet and a letter. The leaflet had for its front cover a picture of "A. W. Van Bysterveld, Expert Inspector of Urine." Mr. Van B. seems, from his picture (Fig. 1) to be a man of mediocre intelligence who runs to naturally curly hair and an artificially curled mustache. The analytical methods employed by Mr. Van B. in examining urine are described as follows:

"This is done by a careful and secret process handed down generation after generation, and most carefully guarded by the old families of Europe. Its age alone entitles it to the confidence of all. It has stood the test of years upon years, giving at all time substantial proof of its undoubted efficacy."

The "expert examiner" is characterized thus:

"A. W. Van Bysterveld, the chief inspector, whose secret methods are not taught in schools, examines on an average of 25,000 bottles of urine a year. This alone stamps him as an authority and of exceptional qualifications. In conjunction with him are the consulting physicians who prescribe the remedies. This combination assures you of a medicine that goes direct to the root of the evil."

SEVERAL LETTERS ARE RECEIVED

The letter that came in answer to the inquiry, referred to the mailing case and pamphlet that were being sent and then went on to say:

"Our method of examining the urine and thereby locating the CAUSE of trouble and prescribing medicine to remove the cause, has proved most successful in the past.

"Our fees, when urine is sent by mail, are $1.25 per week, which includes a careful examination of the urine and medicine enough to last one week."

This letter was signed by the company but the initials of, presumably, the writer were given as "G. R. S." In a clipping which we have on file from a Grand Rapids (Mich.) paper we learn that George R. Stark, M.D., of Grand Rapids, is secretary of the Van Bysterveld Medicine Company. Whether Dr. Stark wrote the letter quoted above can only be surmised.

The company's letter was purposely unanswered for eight months, during which time a number of "follow-up" letters were received, each urging the prospective victim to send in the sample. The November "follow-up" letter —also bearing the initials G. R. S.—had the following statement:

"Perhaps you have overlooked the fact that we make the first examination free, that you have the benefit of the best expert advice upon your condition without any cost to yourself, and that should you decide to take a course of treatment the cost is only $1.25 for one week or $2.25 for two weeks."

SAMPLE ONE

On receipt of the November letter it was decided to test the analytical and diagnostic powers of the Van Bysterveld concern. For this purpose the Association's chemists made up a few ounces of the following mixture and a vial full of it was sent to the company:

Hydrant water	about 1 dram
Pepsin	trace
Aniline dye	enough to color
Ammonia	trace

This solution was sent to the Van Bysterveld Medicine Company for its "expert inspector" to examine and a letter was written asking the company to diagnose the supposititious patient's case. Here is its diagnosis:

Diagnosis 1.—"Careful examination of the urine shows there is too much acid in the blood, which will cause a rheumatic condition, the back is weak, and you will have a tired nervous feeling most of the time."

SAMPLES TWO AND THREE

In the meantime two persons, one in Iowa and the other in Michigan, had been asked to correspond with the concern, so as to obtain the mailing cases and vials. These vials were filled in the Association laboratory but were mailed to the Van Bysterveld Company from the towns in which their respective recipients lived—and *they were filled with a part of the same mixture that was sent in the first vial!* Back came the following diagnoses:

Diagnosis 2.—"Careful examination of the urine shows the circulation of the blood to be very poor, the liver is not working

properly, which will cause gas in the stomach and bowels and will effect [*sic*] the heart, you have caught a little cold which has settled in the back and stomach and you will have a nervous feeling."

Diagnosis 3.—"Careful examination of the urine shows you are losing too much albumin in the urine, which will cause the back and kidneys to be weak, and there is a catarrhal condition of the stomach and bowels, and you will have a tired nervous feeling most of the time."

It seems, therefore, according to the "careful and secret process" of examining the urine that is so "carefully guarded by the old families of Europe," that a mixture of hydrant water, pepsin, anilin dye and a trace of ammonia indicates many pathologic states. Only one condition seems to be common to the three cases diagnosed and that is the "tired, nervous feeling." According to Van Bysterveld, whatever else may ail a person who is excreting pepsin, anilin dye and hydrant water through his kidneys, he will unquestionably be both "tired" and "nervous."

Seriously, though, the reason for tacking on the "tired, nervous feeling" to every "diagnosis" is perfectly evident. Every individual who is sick and every individual who *thinks* he is sick, to say nothing of a large number of people who belong to neither class, will have a "tired, nervous feeling," at least once in a while. It will be noticed that whenever the Van Bysterveld "diagnoses" deal with anything but the broadest generalities they describe such indefinite little aches and pains as any person suffering from the slightest indisposition would be likely to have. And naturally, it is the indisposed who, as a rule, write to these fakers.

SAMPLES FOUR AND FIVE

Still further to demonstrate the worthlessness of the alleged uranalysis two more specimens were sent from two different persons in Chicago. These specimens also were prepared in the Association laboratory and had the following composition:

Hydrant water	95 per cent.
Glucose	5 per cent.

Nothing was added to give either color or odor to this last mixture! Now, as every physician knows, the presence of glucose in urine in such a large proportion as 5 per cent. is not only one of the easiest things to ascertain but any person excreting that amount of sugar would be in a desperate condition. Evidently, therefore, if any examination, worthy the name, of the last two specimens had been made the presence of sugar must have been evident. What did "expert inspector" Van Bysterveld have to say regarding these two cases?

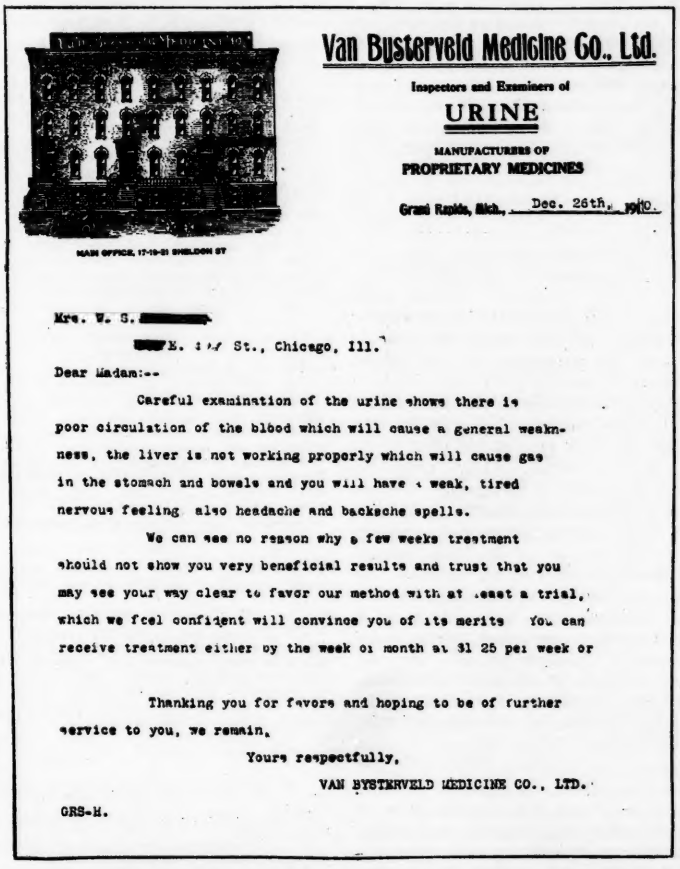
Diagnosis 4.—"Careful examination of the urine shows there is poor circulation of the blood, which will cause a general weakness, the liver is not working properly, which will cause gas in the stomach and bowels, and you will have a weak, tired nervous feeling, also headache and backache spells." [See Fig. 2 for a photographic reproduction of this "diagnosis" letter.]

Diagnosis 5.—"Careful examination of the urine shows there is too much uric acid in the blood, which will cause a rheumatic condition, the back and kidneys are weak, and there is a catarrhal condition of the stomach and bowels."

Not a word about the presence of sugar! No mention of the danger that a person excreting 5 per cent. of glucose would be in!

CONCLUSION

The whole thing shows conclusively that the "examination" of the urine is a farce, the diagnosis is a fake and the taking of money from victims for the "treatment" of a purely imaginary disease is a fraud and a swindle. It shows, too, that those publications which accept the advertisements of this concern are, wittingly or unwittingly, participating in the profits of scoundrelism. We sincerely hope that the overworked fraud - order department of the United States postoffice will in the near future get around to this picturesque, but vicious humbug. We trust, also, that if the operators of the Van Bysterveld Medicine Company cannot be given board and lodging at either state or federal expense, they will at least be forced into a more reputable, even if less profitable line of human activity. The swindler who sells stock in bogus companies to presumably intelligent human beings is a gentleman compared with those scoundrels who lie to the sick, humbug the suffering and fraudulently take the money of the incapacitated.



MAIN OFFICE, 17-19-21 SHELDON ST

Van Bysterveld Medicine Co., Ltd.

Inspectors and Examiners of

URINE

MANUFACTURERS OF

PROPRIETARY MEDICINES

Grand Rapids, Mich., Dec. 26th, 1910.

Mrs. W. S. [redacted]

[redacted] E. 1[redacted] St., Chicago, Ill.

Dear Madam:--

Careful examination of the urine shows there is poor circulation of the blood which will cause a general weakness, the liver is not working properly which will cause gas in the stomach and bowels and you will have a weak, tired nervous feeling also headache and backache spells.

We can see no reason why a few weeks treatment should not show you very beneficial results and trust that you may see your way clear to favor our method with at least a trial, which we feel confident will convince you of its merits. You can receive treatment either by the week or month at $1 25 per week or

Thanking you for favors and hoping to be of further service to you, we remain,

Yours respectfully,

VAN BYSTERVELD MEDICINE CO., LTD.

GRS-H.

Fig. 2.—Photographic reproduction (much reduced) of one of the "diagnosis" letters sent in reply to a suppositious patient who had submitted a mixture of hydrant water and glucose. The name of the person and the house number have purposely been obliterated.

PALATABLE LAXATIVE

Dr. L. F. Cummings, Hopkinton, Iowa, sends the following formula for a laxative devised by his daughter "to take the place of the similar high-priced preparations":

℞	gm. or c.c.		
Phenolphthalein	gr. cxxviii		8.
Salicylic acid	gr. x	or	.60
Baker's chocolate	ʒj		30.
Syrup of acacia	ʒj	ad	500.

Melt the chocolate by aid of heat, mix with the syrup of acacia, then add the salicylic acid and phenolphthalein and mix thoroughly. Dispense with "shake label." Dose: 1 to 3 teaspoonfuls. Each fluid dram contains about 1/15 grain (.004 gm.) salicylic acid and 1 grain (.06 gm.) phenolphthalein.

Correspondence

A Preliminary Report on the Mortality of Cancer in the United States, as Given by the Census of 1910

To the Editor:—Bulletin 8, Mortality Statistics, 1909, Bureau of the Census, just issued, gives valuable information regarding the mortality from cancer in the registration areas of the United States. This list includes eighteen states in registration areas and fifty-four cities in non-registration states with an estimated population in 1909 of 48,776,893, being 53 per cent. of the estimated population of the United States.

It is thus seen that the estimated population is a little larger than the real population, which, in round numbers, is 91,500,000, as shown by the latest census report. Taking the above official statement as a basis for comparison, it appears that the registration area in the United States includes one-half of the population. Therefore, by doubling the number of deaths indicated by these mortality statistics, the entire death totals would be approximately determined. In the report mentioned cancer ranks sixth in the mortality list.

On this basis, the mortality tables show (Bulletin 8, page 20) that the deaths in 1909 are in point of frequency in round numbers as follows:

1. Tuberculosis	163,000	4. Pneumonia (all kinds)	98,000
2. Heart disease	132,000	5. Nephritis	97,000
3. Diarrhea and enteritis	105,000	6. Cancer	75,000

The same statistics show the increase of cancer from 1908 to 1909 on the same basis of comparison to be 8,000 (Bull. 8, Table 8, pp. 128-129).

Comparing the deaths from cancer (7,034) for the same year (1909) in the State of New York as published in its monthly Bulletin January, 1910, with its population by the recent census of 9,000,000, the relative mortality in New York is found to be relatively a little greater than in the registration area of the United States. These statistics indicate that one person out of every 1,200 of our population dies every year from cancer. A recent writer, after compiling statistics of the mortality from cancer in European countries, and basing his comparison on population, asserts that there are 80,000 cases of cancer in the United States with a yearly mortality of 40,000. It is difficult to obtain from reliable statistics the average duration of cancer of all varieties. It is, however, believed to be a conservative estimate that the average duration of cancer is three years. On this basis it would appear that at this time there are about 225,000 cases of cancer in the United States. The fact remains, however, that according to the best analysis of statistics attainable, there is a yearly mortality from cancer in the United States of 75,000. In this connection it must be remembered, first, that cancer is not (usually if ever) in the lists of diseases which boards of health require to be reported. This being the case, not all cases of death from cancer are reported as such. Some individuals and families are averse to having the cause of death known and it is not accurately reported, the death being attributed in death certificates to some other cause.

In the second place, doubtless a very considerable number of cases of internal cancer and tumors in various parts of the body are never correctly diagnosticated, and are never included in mortuary tables as such. Thirdly, as the census was taken nearly nine months ago, the natural increase in population would tend to correct any overestimate of the mortality from cancer for 1910.

Until the work of the Bureau of the Census is completed, it will be impossible to know the exact population in registration areas, as compared with that in non-registration areas, and this basis must be known before the ratio of mortality of cancer can be established. Further analysis as related to race, sex and locality cannot be determined until the information in Bulletin 8 has been completed by the census bureau.

When this information is accessible, it is my purpose to make a supplemental report, which will give more accurate data concerning the presence, increase and mortality of cancer in the United States. Enough, however, is known to fix approximately the mortality and demonstrate the rapid increase of cancer. WALTER B. CHASE, M.D., Brooklyn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CLASSIFICATION OF TUBERCULOSIS

To the Editor:—Please give me any information possible in regard to the classification of the various stages of tuberculosis, especially in regard to the Turban-Gerhardt classification.

W. B. LAFFER, Cleveland.

ANSWER.—Turban's classification, put forward in 1899, forms the basis of the classification in use to-day. In Europe it has been modified by the general adoption in addition of part of Gerhardt's scheme. In this country the National Association for the Study and Prevention of Tuberculosis has modified Turban's scheme by adding certain clinical data. Trudeau has a scheme of his own. The three classifications are given below in parallel columns as given in "Tuberculosis," edited by A. C. Klebs, 1909, p. 362.

TURBAN-GERHARDT	NATIONAL ASSOCIATION	TRUDEAU
I	I. INCIPIENT (FAVORABLE)	I. INCIPIENT
Disease of slight severity, limited to small areas of one lobe, that, for instance, in case of affection of both apices, may not extend beyond the spine of the scapula and the clavicles; in case of affection of one apex, frontal, beyond the second rib.	Slight initial lesion in the form of infiltration, limited to the apex or a small part of one lobe. No tuberculous complications, slight or no constitutional symptoms (particularly including gastritis or intestinal disturbances or rapid loss of weight). Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours, especially if at rest. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent.	Cases in which both the physical and rational symptoms point to but slight local and constitutional involvement.
II	II. MODERATELY ADVANCED	II. ADVANCED
Disease of slight severity, more extensive than I, but affecting at most the volume of one lobe, or severe disease extending at most to the volume of one-half lobe.	No marked impairment of function, either local or constitutional. Localized consolidation, moderate in extent, with little or no evidence of destruction of tissue. Or disseminated fibroid deposits. No serious tuberculous complications.	Cases in which the localized process is either extensive or in an advanced stage, or where, with a comparatively slight amount of pulmonary involvement, the rational signs point to grave constitutional impairment or to some complication.
III	III. FAR ADVANCED	III. FAR ADVANCED
All cases extending beyond II, and all such with considerable cavities.	Marked impairment of function, local and constitutional. Localized consolidation, intense or disseminated areas of softening, or serious tuberculous complications.	Cases in which both the rational and physical signs warrant the term.

GATE CITY MEDICAL COLLEGE CONDEMNED

To the Editor:—1. Is the Gate City Medical College a reputable medical school?

2. Are graduates of this school allowed to become members of the American Medical Association?

J. A. BURNETT, M.D., Calvin, Okla.

ANSWER.—1. This college, formerly located in Texarkana, Texas, but now located in Dallas, was mercilessly exposed by the *Journal of the Arkansas Medical Society*, August, 1907. A circular sent out in that year by that college offered "a course in home reading (mail course) in medicine for $25," on finishing which, a "special diploma" would be granted. The statement was also made that "it takes from four to six months to finish the mail course." There had long been rumors that the college was little better than a diploma mill, but when summoned to appear before the Arkansas Medical Society, Dr. J. W. Decker, the dean, denied the allegations and invited an inspection. The inspection was made, and a part of the report is as follows: "A medical college organized and launched in the midst of an era of the greatest medical energy and progress the world has ever known, (a) that has practically no educational requirement for admission; (b) that is without an anatomic laboratory; (c) that does not require its students to dissect; (d) that makes false representations in its catalogues, thereby attracting many students; (e) that is without sufficient hospital advantages, thus depriving students of the best means of studying diseases clinically; (f) that gives lectures by mail for which credit is given;

(g) that is conducted dually, brazenly, irregularly and unprofessionally, in a Dr.-Jekyll-and-Mr. Hyde manner, should meet its just reward at the hands of the courts. The 'stigmata' of fraud were so much in evidence as to warrant the conviction that not only is Dr. Decker guilty of unprofessional conduct meriting the unqualified condemnation of the profession, but the charter under which he is authorized to conduct his school should be summarily revoked by the Arkansas and Texas authorities, thereby putting an end to a brief but disgraceful chapter in the history of an Arkansas-Texas medical college." Graduates of this college have not been admitted to the examinations of the Texas State Board of Medical Examiners since November, 1907.

2. The school of graduation is not a direct factor in determining eligibility to membership in the American Medical Association. The By-Laws provide that "any physician reported as a member in good standing of a constituent association by the secretary of that association" shall be eligible to membership. In practically all of the states, all members in good standing of the component societies are, *ipso facto*, members of the state association. Consequently all members in good standing of component county societies are eligible to membership in the American Medical Association. A county society may adopt such restrictive regulations regarding membership as its members see fit. Such restrictions, however, exist in very few county societies, admission being on the basis of personal merit.

SODIUM CACODYLATE

To the Editor:—In THE JOURNAL (Nov. 12, 1910, p. 1750) "P. L. M." inquires concerning sodium cacodylate. I note that in your answer as to literature on the subject you make no mention of an article on that subject by Prof. Holmes C. Jackson and myself which appeared in THE JOURNAL, June 22, 1907. Inasmuch as this article is the only one thus far published that gives an authentic description of the physiologic action of the drug, based on pharmacologic investigation and clinical observations, I am surprised that it escaped your notice.

As the question of organic arsenic preparations is now attracting so much attention, I would esteem it as a favor if you would publish a request that anyone who desires information on sodium cacodylate or anyone who has used the drug, successfully or not, communicate with me. SPENCER L. DAWES, Albany, N. Y.

The Public Service

Medical Department, U. S. Army

Changes during the week ended Dec. 31, 1910.

Patterson, Robert U., major, ordered to Boston, about Jan. 26, 1911, to read a paper before the School of Medical Officers, Massachusetts Volunteer Militia.

Casper, Joseph, lieut., ordered to Fort Slocum, N. Y., for temporary duty until Jan. 20, 1911.

Girard, Joseph B., colonel, retired from active service.

Sweazey, Verge F., captain, retired from active service with rank of major.

Whitmore, Eugene R., major, leave of absence extended two months.

Ashford, B. K., major, leave of absence extended twenty days.

Collins, C. C., major, leave of absence extended ten days.

Haverkampf, C. W., lieut., left Fort D. A. Russell, Wyo., on fifteen days' leave of absence.

Carr, William B., lieut., reported for temporary duty at Fort Myer. Left Fort Monroe, Va., on Dec. 26, 1910.

Smith, A. M., major, in addition to his other duties, will take charge of the office of chief surgeon, Department of Texas.

Wolven, F. R., dental surgeon, reported for temporary duty at Fort Ward, Wash.

Mason, George L., dental surgeon, reported for temporary duty at Fort Missoula, Mont.

Cullen, Charles W., Medical Reserve Corps, reported for temporary duty at Fort Duchesne, Utah.

Medical Corps, U. S. Navy

Changes during the two weeks ended Dec. 31, 1910.

Field, J. G., surgeon, ordered home to await orders.

Taylor, J. L., P. A. surgeon, detached from the naval hospital, Philadelphia, and ordered to the *Chester*.

McLean, A. D., P. A. surgeon, detached from the *Chester* and ordered home to await orders.

Munson, F. M., P. A. surgeon, detached from the *Buffalo* and ordered to the *Independence*, temporarily.

Backus, J. W., P. A. surgeon, detached from the recruiting station, Detroit, and ordered to the *Pennsylvania*.

White, E. C., P. A. surgeon, detached from the *Vicksburg* and ordered to the *Buffalo*.

Robbins, I. W., asst.-surg., detached from the *Pennsylvania* and ordered to the *Vicksburg*.

Field, J. G., medical inspector, commissioned medical inspector from Oct. 7, 1910.

McDowell, R. W., asst.-surg., ordered to the Naval Academy on the expiration of sick leave.

DeValin, C. M., surgeon, detached from the marine recruiting station, Philadelphia, and ordered to the navy recruiting station, Detroit.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, POSTGRADUATE WORK, CONTRACT PRACTICE, INSURANCE FEES, LEGISLATION, ETC.

THE SECRET COMMISSION EVIL

Report of the Committee Appointed by the Erie County (N. Y.) Medical Society to Investigate the Division of Fees and Its Causes and Remedies

At a meeting of the Erie County Medical Society, held Feb. 21, 1910, Dr. M. D. Mann presented a paper entitled "Dividing Professional Fees." The address was fully discussed and a resolution was unanimously adopted directing the president to appoint a committee to investigate the entire subject, including the causes and possible remedies. In obedience to such instructions a committee was appointed and respectfully reports as follows:

Frequent meetings have been held and the matter assigned us has received careful investigation and consideration. With the object of securing cooperation and information from the profession, a circular letter containing twelve questions was sent to each member of the society and a reply requested. The response revealed disappointing apathy and lack of interest in problems which vitally affect the welfare, standing and ideals of the medical profession. About 540 circulars were sent and thirty-one replies received. Attention is simply directed to this demonstration of indifference; no comment is ventured. The result of the inquiry revealed a practically unanimous agreement that the chief causes of commercialism and its attendant abuses were overcrowding of the profession and too low a standard of education. Your committee has sought information wherever it could be obtained and has tried to arrive at definite conclusions after mature deliberation.

DR. MANN'S CHARGES SUSTAINED

It has been found that Dr. Mann's statements and charges are true—that the practice of dividing fees or giving of commissions by some surgeons to physicians has existed in this city for several years, and that the exposure and criticism of the abuse was justified. We thoroughly approve acquainting the profession with the facts concerning this vicious and dangerous innovation, and favor warning the public of the unhappy results which will follow its continuance or increased prevalence.

SECRET METHODS EMPLOYED

The division of fees has been accomplished by numerous methods. All of them are more or less adroit, deceitful and dishonest. The principal effort has been directed to provide secrecy. In the course of time some operators have become bolder than others and have gradually converted the practice of surgery into a traffic of operating on commission. No one publicly justifies the commercial bargain. If it is defended privately, the excuse or argument is cynical, shifty, selfish or sophistical. After examination from every side there is no honest course except emphatic and unequivocal condemnation of this rather new species of hidden graft.

No matter how cleverly the division of a fee is accomplished, it is done almost invariably without the knowledge of the patient. The person who pays for an operation does not know that part of the amount, which has varied from 25 to 50 per cent., occasionally goes to the physician who recommended the operator. The physician and the surgeon are supposed to render their individual bills, and the afflicted person is entirely ignorant of the "gentlemen's agreement" or "community of interest" which has been introduced from the realms of high finance and legal honesty. The real purpose of the deal is to encourage the physician to send his patients where he can obtain a share of the money paid for relief or attempted relief. The surgeon may be highly competent or he may not be, and the physician may be influenced by financial encouragement. At all events, the performance must pay because it has flourished and been profitable at times when other methods would probably have failed. At times, the demands of the physicians have been quite high and some of the prosperous merchants in surgery may begin to wonder if they have not created a Frankenstein monster.

PERNICIOUS RESULTS OF PRACTICE

The practice may lead to unnecessary operating and junk surgery through increasing zeal to be busy and to establish a false measure of success by the amount of income derived from business instinct and sagacity. The untrained and inex-

perienced cutter who has learned that there is money in operating, which is lost by the physician, is encouraged to obtain work which should go to the experienced, skilful surgeon who clings to the traditions and ideals of the profession, and will not cringe, stoop or barter to obtain his earned and rightful privilege of employment. The fee may be increased or stretched by agreement to provide for distribution of the spoils, and altogether there is something about the whole wretched proceeding which smells of the rebater, the promoter and the greed for disguised plunder.

MATTER SHOULD BE AIRED

Some members of the profession keenly regret and reprobate any public exposure and discussion of the subject, and fear that the public will become suspicious of all the members of the profession. The answer is simple: it is time that the people knew of the practice and be given an opportunity to penetrate some of the mysteries surrounding the sick-bed. In time the intelligently suspicious may distinguish between types of doctors and exhibit a tendency to investigate conditions quite puzzling to-day.

There is at least one profession that should be clean and have the confidence and trust of the public. Whatever may be its shortcomings in ability to help or save, the effort and purpose must be free from the taint of sordid commercial deals dependent on human suffering and woe. There is very often no more complete picture of helplessness than that of the sick who yearn for relief and know not where to seek it. If abuses exist, the profession must decide whether it will abolish them or allow them to prevail until the public is compelled to undertake the task. Your committee believes that the medical profession should perform the disagreeable work, and that an element is not afraid to expose or denounce iniquities which tend to degrade those who decently follow a noble calling.

LOCAL SITUATION

Honesty and a sense of duty compel us to call attention to the local aspects of this question and confess that an evil has existed. Surgeons can apply a prompt remedy, if they will, by simply stopping the practice. The committee has learned with pleasure and gratification that practically all of the operators in this county have signed an agreement that they will not indulge in any division of fees, and that any violator of the agreement will submit to a penalty which may be fixed by the Erie County Medical Society. It remains for the society to determine the value of this agreement and what steps shall be taken to ensure enforcement. The appointment of a committee to act as a court of honor, and consider complaints, examine evidence and devise methods of punishment—when acts in violation of certain standards of professional dignity are perpetrated—is certainly worthy of careful consideration.

We are sadly deficient in safeguards relating to professional conduct unless flagrant crime supplies a chance for decisive and wholesome action. The legal profession has more efficient control and well-defined direct methods of procedure when they are employed. At present the purpose is to be suggestive in the hope of arriving at some consideration of this theme by the society or its proper committee. If no other penalty can be found at this time, publicity in some form deserves attention as a possible corrective instrument. Something should be done to discriminate between the man whose influence is thoroughly damaging to the profession, and the one who helps to make it reputable and worthy of the highest admiration and confidence.

OVERCROWDED PROFESSION PRINCIPAL CAUSE

Any study of the causes and possible remedies of forms of commercialism, and especially of the division of fees, must be considered in a broad way. The evils are not local but general, wide-spread and probably national in scope. Other cities and localities throughout the country report that the same conditions are prevalent, and have developed in recent years. It would be misleading and unjust to search for causes or seek for explanations in this region, when we fully realize that we are dealing with an epidemic and not an endemic variety of infection. In classifying causes, the chief factor seems to be the unfortunate and unnecessary overcrowding of the medical profession. Those who have studied this phase of the problem arrive at the conclusion that about one-third or, at most, one-half of the present number of physicians and surgeons in the populous districts of this country could fulfil all legitimate demands for human relief and secure a competent living. The average income is far below the amount required to permit of a mode of life consistent with the modern practice of medicine. A large proportion of the profession cannot obtain sufficient practice, experience or skill to become proficient. If the number of doctors in this country were diminished by two-thirds or at least one-half, that proportion to the population would ensure adequate work and emolument, and correspond more closely to conditions in other nations.

The lamentable overcrowding has a most deleterious effect on the profession and the type of men who join its ranks. But the most baneful results will certainly be more keenly felt and appreciated by the public as they are discovered and better understood. At present this nation is in a semibarbarous state so far as provisions for control of national health is concerned. The full meaning of the conservation of natural resources has not yet been recognized as including human beings. In considering overcrowding no attempt has been made to include the army of new "pathies," faddists and variegated assortments of healers, pseudoscientists, or the old contingent of perennial quacks and nostrum-venders. Perhaps, in the advance of preventive medicine and medical education, we are wasting too much sympathy on the class "who never considered it necessary to add the incident of learning to the accident of brains." It has been asserted that overcrowding has long existed, and that evidences of many tricks to secure advancement are comparatively recent. There is no time for judicious discussion of the question whether there has been a decline in the moral standards of the profession, and how much any change is due to imitation and the influence of business crookedness and predatory customs which abound in a favorable environment. The important thing is to call attention to the fact that conditions have changed which make the effects of overcrowding more acute, the scramble for employment and a living more intense, and the temptation to resort to shrewd tactics more common and glaring.

PROGRESS OF PREVENTIVE MEDICINE

During the last twenty years, preventive medicine has made gigantic strides. The incidence of illness, particularly of childhood, has undergone a vast diminution, and the general death-rate has practically been cut in half. The marvelous advance in surgery has removed a large group of patients from the field of medicine, and new discoveries have shortened the period of illness or changed its course. The tardy awakening to the importance of public health will add more and more force to the crusade against disease.

CONTRACT PRACTICE AND OTHER EVILS

Vicious, dangerous and cheap modes of practice have developed to a surprising extent in latter days. Medical and surgical relief under contract, and stultifying agreements with lodges, societies, benefit associations, etc., and underpaid services to life-insurance companies, have demoralized practice among young men and robbed others of just remuneration. These abuses are largely indefensible, being delusive to the patient and public, as the results are mostly ineffective, the service superficial and careless, and often of no genuine value. It is only just to young physicians and the public that this increasing abuse should be investigated and fully considered at a future time. There is much harm and humbug in the practice, and the physician should no longer be a tool for crude, cheap work. Positions held by medical men almost invariably yield totally inadequate compensation, and any protest is unavailing because the supply is apparently unlimited. The young practitioner seeks opportunity for experience and a chance to escape idleness while waiting for employment in a profession where there is little or no room. There are two classes—one seeking the sick to make a living, and another expecting a reference of a patient or a consultation.

Practice legitimately belonging to competent physicians has been given over to faddists with a squint or kink, largely through the fault of narrow dogmatic members of the medical profession who could not or would not realize that the mentality of a patient required thought and attention, and that exercise of the body or its components was a physiologic aid or necessity in treatment.

Hospitals and other institutions have been monopolized or exploited by a few, and some of the hospitals supported by philanthropy are simply hotbeds for fee-splitting and commission jobbery. The industry is tolerated and winked at because the new method fills the private rooms. The amount of revenue the candidate can supply has occasionally become more essential than the amount of ability and character he can offer, when appointments are considered by trustees, or dictated by the staff.

GENERAL PRACTITIONER UNDERPAID

The division of a fee is only one abuse. There are many others harder to perceive and reach, and some of them have given an impetus to this method of trading and may perpetuate it. Undoubtedly this inducement of a commission has been extended in a pernicious effort to compete and grasp a share of operative work. Again it has been used as furtive evidence of sympathy toward the lesser-paid physician. This leads to a consideration of one of the principal contributing factors related to superabundance of doctors and their fees. The cost of living has decidedly increased, and the mode of life has undergone a transformation too little appreciated. The fee and the income have not changed in proportion, if at all. Extravagance is the fashion and the necessities of a progressive physician accumulate each year. He belongs to a class which is struggling along, surrounded by combinations, and the waves of prosperity lose their force before reaching him.

The surgeon and the specialist have educated the public to place a higher value on their services, and there is force in the contention as a rule. Special skill, experience, long training, responsibility and technic are required, and the qualified surgeon is rarely overpaid. Whether the surgeon who gives away half his fee regards himself as overpaid, is another question. The increase of operators and the lure of the knife, because it loosens the purse-strings, will soon equalize and distribute opportunity, and lower the rate of compensation. The surgeon has enjoyed halcyon days and deserved many of them, but he will have to guard and discipline the recruits to his guild, or the public will revolt.

PHYSICIANS MUST DEMAND PROPER REMUNERATION

The physician is actually and proportionately underpaid, and it is almost entirely his own fault. If overcrowding prevents the demand for proper remuneration because others will act for less, let him place the responsibility for the overproduction of doctors where it belongs and register his protest, not alone for selfish reasons, but vastly more for the benefit of the whole profession and the community. The competition that affects livelihood is keenest and most demoralizing among the mass and not among the few. There is no way by which the public can distinguish between the physician who has spent time and labor to become proficient and the one who has not. We have but one degree, and it may mean much or little. Nor is there any good reason why the fee of the physician should be rigidly fixed with no reference to the value of service. He should charge for the thoroughness, efficiency, skill, and time employed in his study of an individual case. Many times his diagnosis, advice and treatment are more valuable than surgical interference. The proper examination of a patient has become a problem involving time, wide knowledge, and chemical and microscopic analysis and search, requiring more and more special training and skill. The time has come for the physician to assert his position and claim what he deserves. He should receive his reward openly and not secretly, and demand due recompense of the patient and not of the surgeon. Let him stand on his own feet and not beg or barter with the surgeon for a hidden share which he has not the courage to ask for. Let him seek assistance, when he needs it, with motives as unmixed as if he were the patient, and receive it with a clean hand from a clean hand, and preserve a decent opinion of himself and his possibly more fortunate confrère.

SUPERABUNDANCE OF MEDICAL COLLEGES

The explanation of the overcrowding in the medical profession will be found in riveting attention on the character of medical education in this country; and recently an opportunity has been afforded to reflect on this interesting subject by the publication of Carnegie Foundation Bulletin No. 4. It should be read by every member of this society. This report may be considered intolerant and radical, but a great service has been performed; and the collection of facts based on investigation will have a tremenduous educational value and influence. Already its effect has become manifest, and the supplemental report will probably furnish a guide to action by comparison with European standards. It seems to be true that there are as many medical colleges in this country and Canada as in all the rest of the world. Canada still protects its population from the flood of graduates poured into this country. It also seems to be true that about one-third of the medical colleges in this country could be lifted to a higher modern standard and supply all the doctors needed for an indefinite time and growth of population.

The facility with which medical colleges could be established in this country has long been a disgrace. There probably was a time when the proprietary medical school, with all its schemes for profits among a few, was tolerable or even seemed to be necessary. That time has passed and the school of the proprietary type and its self-created professors, will be eliminated. The medical school will ultimately be obliged to cease depending on students' fees for support, and liberal funds will be required to furnish the tuition which should be supplied to-day. The connection with a university will be close, true and actual—not spurious or non-existent, and trustees and councils will probably cease to be rubber stamps or respectable, irresponsible nonentities, well described by Dickens.

NEW STANDARD OF MEDICAL EDUCATION IMPERATIVE

Many so-called medical colleges are still proprietary in spite of evasion and strenuous efforts to escape from that category. There are direct and indirect profits, and scrutiny will go deeper and deeper to discover the true purpose and objects of these prolific institutions of learning. Is it not very strange that we have such a prodigal supply of medical colleges and that overproduction of the graduates continues unabated, while the professors must know that the oversupply is unnecessary and that the fresh product cannot be assimilated? Is it not perfectly plain that doctors are responsible for the superabundance of doctors and the attendant evils which result from the wholly unnecessary excess? The most wholesome, natural remedy would follow an awakening of the whole profession to its interest and duty in dealing with a national disgrace. The united profession should decide on the necessity for medical colleges, what status they should have and maintain, what shall constitute a medical education, and what shall be required of a licentiate to practice on humanity. There should be control of the appointments of professors, and their duties and obligations to those really concerned should be defined. These matters should not be left to a few self-perpetuating and self-constituted faculties who have enjoyed too much power and freedom from restraint and domination. National and state supervision and radical reorganization of medical teaching and requirements is imperative and inevitable.

There is no reason at present why the standard of qualification cannot be raised more rapidly and the comparison with other countries made less apparent or glaring. The flood of graduates can be checked with safety. It is sophistical to claim that a better class will gradually replace those who are striving to-day. That is the old cry heard with every advance. The real demand is for increased intelligent and stringent legislation and some guarantee that a state license assures true proficiency.

PRESENT STATE EXAMINATION NOT PROPER TEST

A beginning has been made in this state by extending the power of the state regents and providing for a state board of medical examiners. Objections and obstacles had to be overcome before this step was taken, and some good has been accomplished; but an examination for fitness to practice medicine and surgery by present methods must be obviously incomplete and unsatisfactory to anyone who has given the matter any careful thought.

The regents appoint the examiners. If any plan for selection because of special training or attainments is employed, some of the results are truly surprising. A recent excellent appointment deserves warm commendation. The schools, dogmas, creeds and sects are represented, and possibly the recommendation of candidates may emanate from medical societies during political sessions. The board of examiners is presumed to safeguard the public and to act as a clearing-house and check on the medical colleges. When the graduate satisfies the examiners and the law, he is licensed to practice on anybody in any way he chooses.

The candidate is subjected to a written examination and is supposed by many to answer correctly 75 per cent. of the questions. As a matter of fact, he is given fifteen questions, allowed to select ten, and must gain a marking of 75 on them. Consequently, he is really obliged to answer correctly 50 per cent. in accordance with the opinion of the examiners. The questions and answers are published frequently, and it seems as though the students who make a collection of them and cram, or are quizzed assiduously, might find it advantageous. No time need be consumed in explaining to an intelligent physician how crude, farcical and unreliable such a test for admission into one of the highest professions must be of necessity. High percentages obtained in this way are cited

with pride by the medical colleges as proof of superior teaching and preparation. The professors and the examiners are both anxious to advance the standards, but new obstacles and conservative policies seem to block the way.

NEW STANDARDS MUST REPLACE OLD

Your committee has learned with gratitude that the time is now near when the candidates will be compelled to reach a percentage of 75 on answers to the full fifteen questions. Thus progress is gradually assured. The time seems to be ripe to insist that the state examinations should in reality prove a candidate's fitness to practice medicine and surgery by demonstration of his knowledge at the bedside and in the laboratory, as well as by written evidence. Before entering such an examination, the applicant should be required to show that he has had actual experience and training in branches of medicine and surgery in a general hospital. It seems eminently fair to request that the licentiate to practice on humanity in this state should be as well qualified as the one the government carefully provides for the sailor and soldier. If such competence could be required, there are a great many problems which would be effectually settled. Of course, the machinery would have to be changed. More money and a reorganization would become necessary, but the real purpose in creating a state board of examiners would be achieved, and their function as sentinels fulfilled. The requirements in preliminary education should certainly be increased in this state.

Legislation should be secured, if necessary, to assist progressive action on the part of the regents, and to transform the personnel, organization and duties of the board of examiners in accordance with present conditions and the need of remedial measures. This society may as well lead in this direction and make its influence felt in the state medical society. It will take time and wisdom to sift the facts and arrive at safe conclusions. There are many interests involved, and while radical action is needed, it should be sane and practical. If there is need of reformation and a sincere desire for improvement, relief seems to lie along that path. If the manifold taints of commercialism are to be discouraged and decreased, and the tone of the profession is to be raised, paramount causes must be attacked. There may be full indulgence in garrulity and strong disapproval of wrongs expressed, but there are only two methods of gaining a greater height. The one who ought to climb must be helped, or lift himself. It is about time to drive home the truth that "a little integrity is better than any career."

PUBLICITY RECOMMENDED

Your committee unanimously recommends that this report be published in medical journals and copies be given to the daily press to be fully presented to the public if possible. Publicity is the safest, sanest course to follow. The confidence of the people must be maintained without equivocation or deception. If the revelation or confession hurts, let the blame rest where it belongs. The mass of the profession is sound, clean and unafraid to condemn ignoble motives and improper conduct which have stealthily stolen into its ranks. Regret is blended with the hope that frank disapproval will make any other action unnecessary.

FUNDAMENTAL CAUSES EXPLAINED

The causes and effects seem easily discernible if they are fearlessly examined and the microscope is occasionally employed instead of a telescope. The historic course of events follows a natural sequence, and it is not surprising that an avenging Nemesis is crying for retribution. When these events are recited in proper order, we can perceive a vast new nation with a rapidly increasing scattered population and no provision for the inception or control of medical education as it existed in older civilized countries. Medical colleges were of necessity created by small practically self-appointed groups, with little or no restraint. Later they were too often established and employed for personal aggrandizement, questionable advantage, and direct and indirect profits. The false system, inculcating special privileges, spread without proper jurisdiction or supervision. In the course of time the outcome was a multitude of proprietary medical schools and gradually a vast superabundance of diploma factories and an oversupply of the product. Substantial benevolent returns from the alumni in proportion to the annual crop were most enticing. Then came control and domination of institutions and increase of lieutenants. Nothing paid so well as professorships and titles, when used to promote the reference of cases and consultations. Frequently the aim in supply was quantity, not quality. Ultimately lamentable overcrowding and a struggle for existence became only too evident. Ambitious doctors endeavored to advance and seize a share of reputation and compensation. Competition was difficult and became keener and fiercer. Many means were suggested to check the flood of graduates and a state examination was introduced. The hoped-for benefit has not been obtained. The number of unnecessary colleges and professors, the yearly flux of deluded graduates, the overcrowding and the baneful competition, continued to exist. Then came the increased cost of living and the added expense of modern practice with no increase and often a decrease in income. This condition is tremendously influenced by industrial and financial revolutions, accompanied by a toleration for moral obliquity and censurable methods in business enterprise. At last a vicious, misdirected mode of competition is found which proves financially successful. It is devoted largely to a pitiful scramble for the dollar, and is still limited to a small part of the profession. One mode of gaining ascendancy and its tribute was followed by another much less tolerable and more reprehensible from a moral standpoint. It is one symptom of reckless revolt, and an adaptation of the policy "after us the deluge." The great mass of the profession has a right to protest and complain of the character and amount of competition to which they have long submitted, but the fee-splitter and the schemer by any method only add another more dangerous incubus. It is the outcropping of the worst, polluted with a desire to substitute one abuse for another of which many have become thoroughly tired and exasperated.

The blame for the degradation and turmoil in the profession should be traced to its true origin, and the labor of reformation belongs largely to those who are responsible for the conduct and output of institutions ostensibly intended for ethical and medical education, and the laxity of government control, which is the core of the whole problem. Let there be no privilege not beneficial to the whole profession and a fair field on level ground. The cleansing process should extend beyond any one evil now exposed to the light. Its associates and their ancestors need ventilation and disinfection also.

REMEDIES SUGGESTED

As the work of the committee progressed, many cynical remarks have been heard to the effect that any exposure and consequent action will prove ephemeral and futile. It is claimed that this society has no legal power to check or abolish such an evil as has been described. But there are methods which can be used in a drastic manner, if necessary. We ask that this report shall not fall cold and be deposited quietly in the archives of this society. What the Erie County Medical Society begins should be thoroughly finished. A form of bribery must be starved by ostracism and denunciation, or strangled by some form of punishment. Let the matter be kept before the society at future meetings. Investigation should continue. Activity and determined persistence will encourage other societies to follow, and the benefit will be widespread. Now that the facts are known and the dangers appreciated, reform or supine toleration are the only courses left open.

RECOMMENDATIONS OF COMMITTEE

To ensure and possibly to guide effective remedial efforts, the following recommendations are submitted and approval requested:

1. Publication of this report in the medical journals and the daily press is recommended.
2. Reference of that portion relating to complaint, investigation and devising some form of punishment, to the committee on professional relations, is recommended, provision being thus made for continued watchfulness and further consideration.
3. It is recommended that the secretary transmit a communication to the state board of regents, urging the necessity of a higher preliminary educational requirement, and definite changes in the method and scope of the examination for a license to practice in this state; and that this matter be referred to a proper standing or special committee to arouse interest, stimulate inquiry and promote necessary progressive action leading to higher medical education.
4. It is also recommended that a special committee be appointed to report at an early date on the extent, character, effects of professional services under contract or by agreement with companies, corporations, fraternal societies and life-insurance companies; this report to include if possible practical remedies which may be applied to diminish this form of employment or place it on a different basis.

Your committee was assigned a difficult, unpleasant and undesired task, and has discharged a duty with honest intent, free from any malice, prejudice or unkind feeling.

Respectfully submitted.

JOHN H. PRYOR, M.D., Chairman.
M. D. MANN, M.D.
BERNARD BARTOW, M.D.
F. PARK LEWIS, M.D.
WILLIAM GAERTNER, M.D.
IRVING P. LYON, M.D.
E. A. BOWERMAN, M.D.
T. J. WALSH, M.D.
GROVER WENDE, M.D., *ex officio.*

POSTGRADUATE COURSE FOR COUNTY SOCIETIES

DR. JOHN H. BLACKBURN, DIRECTOR
BOWLING GREEN, KENTUCKY

[The Director will be glad to furnish further information and literature to any county society desiring to take up the course.]

General subject for the month: Anesthesia and Surgical Shock

Sixth Month—First Weekly Meeting

ANESTHESIA—HISTORICAL

Crawford W. Long, W. T. G. Morton, Charles Jackson, Horace Wells, Simpson.

ANESTHETICS

CHLOROFORM: Chemical and physical properties. Physiologic effects: Locally. By inhalation; stimulant, narcotic, anesthetic, paralytic stages. Effects on central nervous system, respiration, circulation, liver and kidney, metabolism, pupils.

ETHER: Chemical and physical properties. Physiologic effects; differs from chloroform.

NITROUS OXID GAS: Chemical and physical properties. Physiologic effects. Use in combination with air and oxygen. Teter's method.

ETHYL CHLORID: Mixtures of ethyl chlorid.

ETHYL BROMID.

REFERENCE BOOKS FOR THE SIXTH MONTH

Buxton: Anesthetics.
Luke: Guide to Anesthetics.
Patton: Anesthetics.
Turnbull: Artificial Anesthesia.
Crile: Surgical Shock.
Crile: Blood-pressure in Surgery.
Bryant and Buck: American Practice of Surgery, I.
Keen: Surgery, I.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, January 10. Chairman, Dr. W. H. Sanders, Montgomery.

DISTRICT OF COLUMBIA: The District Bldg., Washington, January 10. Sec., Dr. George C. Ober, 125 B St., S.-E.

ILLINOIS: Coliseum Annex, Chicago, January 11-13. Sec., Dr. J. A. Egan, Springfield.

INDIANA: 120 State House, Indianapolis, January 10-12. Sec., Dr. W. T. Gott.

NEW MEXICO: Santa Fé, January 9-10. Sec., Dr. J. A. Massie.

NEW YORK: New York City, Albany, Syracuse and Buffalo, January 31 to February 3. Chief of Examinations Division, Mr. Charles F. Wheelock, Albany.

SOUTH DAKOTA: Aberdeen, January 11-12. Sec., Dr. F. W. Freyberg, Mitchell.

VERMONT: Montpelier, January 10-12. Sec., Dr. W. Scott Nay, Underhill.

WISCONSIN: Milwaukee, January 10-12. Sec., Dr. John M. Beffel, 3200 Clybourn St.

Nebraska May and August Reports

Dr. E. Arthur Carr, secretary of the Nebraska State Board of Health, reports the written examinations held at Lincoln, May 23-24 and August 10-11, 1910. The number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75.

At the examination held May 23-24, 1910, the total number of candidates examined was 59, all of whom passed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Hahnemann Medical College of the Pacific	(1902)	82.7
Hering Medical College	(1910)	87.2
Washington University, St. Louis	(1910)	83.9
Lincoln Medical College (1910) 77.5, 82.1, 83, 83.1, 83.4, 84.7, 85.1, 86.5, 87.9.		
University of Nebraska, College of Medicine (1910) 79.7, 80.9, 82.6, 84.4, 85, 85.5, 86.9, 87.2, 87.7, 88, 88.9, 91.		
John A. Creighton Medical College (1910) 75, 75, 75.6, 75.7, 76.6, 78, 78.1, 78.2, 78.6, 78.6, 78.9, 79.7, 80.2, 81.1, 81.6, 81.7, 82.2, 82.2, 82.5, 82.6, 83, 83.1, 83.2, 83.4, 83.4, 84.5, 84.6, 84.9, 85.2, 85.7, 86, 86.9, 87.7, 88.6, 88.7.		

At the examination held Aug. 10-11, 1910, the total number of candidates examined was ten, all of whom passed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
College of Phys. and Surg., Chicago.. (1897) 80.7;	(1910)	75.4
Bennett Medical College	(1910)	83.5
Ensworth Medical College	(1910)	77.4, 77.5
University Medical College, Kansas City	(1910)	83.4
Barnes Medical College	(1909)	75.4
Lincoln Medical College	(1910)	82.5
John A. Creighton Medical College	(1910)	80.5
University of Nebraska, College of Medicine	(1910)	82.6

Twelve candidates are reported as having been licensed through reciprocity. The following colleges were represented:

LICENSED THROUGH RECIPROCITY		
College.	Year Grad.	Reciprocity with
University of Colorado	(1907)	Colorado
College of Phys. and Surg., Chicago	(1900) (1909)	Iowa
Rush Medical College	(1891)	Michigan
Drake University	(1909)	Iowa
Kentucky School of Medicine	(1907)	Kentucky
Tulane University of Louisiana	(1903)	Tennessee
St. Louis University	(1906)	Illinois
Washington University, St. Louis	(1903)	Missouri
John A. Creighton Medical College	(1904)	Iowa
Eclectic Medical Institute, Cincinnati	(1897)	Iowa
Medical College of Ohio	(1889)	Oklahoma

Arkansas November Report

Dr. F. T. Murphy, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, November 8-9, 1910. The number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 24, of whom 8 passed and 16 failed. Nineteen candidates were licensed through reciprocity, including one osteopath. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Louisville and Hospital Medical College	(1908)	86.7
Tulane University of Louisiana	(1904)	77.5
Harvard Medical School	(1909)	86
University of Michigan, Dept. of Med. and Surg.	(1901)	87.3
Jefferson Medical College	(1902) 81.4; (1909)	85.5, 89.7
Queen's University, Kingston, Ontario	(1909)	87.4

FAILED		
University of Arkansas	(1910)	64.5, 71.5
College of Physicians and Surgeons, Litttle Rock (1908) 64; (1910) 50.6, 68.6, 68.7.		
St. Louis College of Phys. and Surg.. (1908) 73.5;	(1909)	64 66.7
Barnes Medical College	(1910)	62
College of Physicians and Surgeons, Memphis	(1909)	66.5
Memphis Hospital Medical College... (1893) 53.4;	(1910)	56.8
Vanderbilt University	(1888)	71.6
Meharry Medical College	(1910)	65.5, 73.8

LICENSED THROUGH RECIPROCITY		
College	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago	(1907)	Illinois
Physio-Medical College of Indiana	(1901)	Texas
University of Louisville	(1909)	Illinois
Kentucky School of Medicine	(1897)	Kentucky
University of Kansas	(1906)	Oklahoma
Tulane University of Louisiana	(1908) (2, 1910)	Louisiana
Barnes Medical College	(1900)	Oklahoma
Washington University	(2, 1910)	Missouri
St. Louis Woman's Medical College	(1895)	Indiana
Kansas City Medical College	(1898)	Kansas
Columbia University, College of Phys. and Surg.	(1889)	Vermont
Vanderbilt University	(1895)	Oklahoma
University of Tennessee	(1902)	Texas
Physio-Medical College of Texas	(1906)	Oklahoma
University of Texas	(1898)	Texas

Book Notices

DIE EXPERIMENTELLE CHEMOTHERAPIE DER SPIRILLOSEN (SYPHILIS, RÜCKFALLFIEBER, HÜHNERSPIRILLOSE, FRAMBÖSIE). Von Paul Ehrlich und S. Hata. Mit Beiträgen von H. J. Nichols, New York; J. Iversen, St. Petersburg; Bitter, Kairo, und Dreyer, Kairo. Paper. Price, 6 marks. Pp. 164, with 50 illustrations. Berlin: Julius Springer, 1910. Rebman Co., 1123 Broadway, New York City, Agents for the United States.

In this book we have accounts of the fundamental work which led to the introduction of salvarsan ("606") as a therapeutic agent, especially in syphilis. This work is based throughout on the principles of chemotherapy developed by Ehrlich to the effect that a medicine acts only on those cellular structures with which it unites. After long and arduous labors he finally has reached constructive results of the greatest therapeutic importance.

Hata describes succinctly the biologic experiments on which the chemotherapy of the spirilloses is based. For the purpose of these experiments spirilla of recurrent fever, of chicken spirillosis, and of syphilis were used. The action of various substances on spirilla, *in vitro* as well as in infected animals, was determined. The course of the experimental infections and the technic used are described fully. Of the stains tested some were found to be spirillocidal in the test-tube but without effect in the animal body; a large number of arsenical preparations were tested also, and in the course of this work the prompt spirillocidal effect of "606" in non-toxic doses was discovered. In the meantime it had been shown that syphilis was communicable to rabbits, and Hata found that salvarsan, in doses of 0.015 to 0.01 per kilo, promptly kills the spirochetes and hastens the healing of the lesions. The experiments show that the affinity of salvarsan for the spirochetes of syphilis is so great that they are easily destroyed in the animal body without danger to the latter.

In the part written by Ehrlich he discusses, with his usual clearness and brilliancy, the chemical origin of dioxydiamidoarsenobenzol and the chemotherapy of trypanosomiasis and their consequences, the work on which preceded that on the spirilloses. He lays especial stress on the value of his demonstration of the true constitution of atoxyl for the experimental construction of "606," the arsenical radical of which carries the spirillocidal function. When this book was issued, Ehrlich had at hand reports concerning more than 9,000 cases of syphilis which had been treated with salvarsan. Not a single case of blindness or of sudden loss of any other sense is noted. Only a single death in any way directly traceable to the remedy had occurred, and in that case it may have been due to shock incidental to the injection. On account of possible dangers Ehrlich cautions against the use of the remedy in patients with extensive degenerations of the central nervous system, with paresis and tabes, with heart disease, especially angina pectoris, and with aneurysm. The specific action of the remedy is shown not only by its wonderful effects on many of the lesions of syphilis but also by the apparently prompt development of antibodies which, in the case of women, pass into the milk and favorably influence congenital syphilis in nursing children. It has been found also that serum of a patient freshly cured or treated by "606" has a definite action on syphilis in both adults and children. It would seem that such effects indicate the development of antibodies, the stimulus to the formation of which is to be found in the disintegration of the spirochetes and the setting free of antigens. Ehrlich points out that the curative effects of "606" are superior to those of any other remedy in syphilis; a single injection accomplishes practically what mercurial treatment of from four to six weeks will do. He recommends that special attention be given to improvement in the method of administration, to the matter of dosage and the repetition of the injections, and to the discovery of combinations of remedies which would increase the action of "606."

In a short note Nichols (U. S. Army) describes experiments with "606" to test in animals its action on the *Spirochæta pertenuis*, the cause of frambesia. In twenty-four hours after the injection, no more spirochetes could be found and the animals so treated were promptly cured. He advocates a trial of the remedy in the human disease in the tropics.

Iversen (St. Petersburg) details observations on the treatment of recurrent fever with salvarsan; after an injection of 0.2 to 0.3 gm., the spirilla disappeared completely from the blood within four to ten hours, and at the same time the subjective symptoms permanently subsided. Intravenous injection was found to be painless and the results therefrom more prompt than after the painful intramuscular injection. Bitter and Dreyer (Cairo) report similar results, the number of cases treated being, however, smaller. Iversen concludes that the specific spirillocidal effect is marvelous; the spirilla being destroyed with mathematical accuracy without injury to the host, the process constituting a striking instance of a most effective *therapia sterilisans magna*.

From the reading of this book one receives a very definite impression that the introduction of salvarsan marks a permanent step in advance in the treatment not only of syphilis but also of other diseases, like recurrent fever, a step which in no sense is traceable to accident but to the direct result of systematic experimental work guided by genial theoretical conceptions.

A TREATISE ON DISEASES OF THE EYE. By John E. Weeks, M.D., Professor of Ophthalmology in the University and Bellevue Hospital Medical College (Medical Department of New York University). Cloth. Price, $6 net. Pp. 944, with 553 illustrations. Philadelphia: Lea & Febiger, 1910.

This recent candidate for text-book honors opens with a chapter on the development and comparative embryology of the visual apparatus—subjects too often neglected even in larger treatises on the eye and its diseases. A knowledge of the ordinary evolutionary steps through which the organ of vision passes, from the appearance of the primary optic vesicle to the full development of the organ, is necessary not only to a rational understanding of ocular pathology, but to an enlightened appreciation of physiologic optics. We are glad to see that these matters are as fully discussed as is consistent with the scope of a student's manual. There are several other chapters that demonstrate completeness in the treatment of ophthalmic subjects, among which are a description and a colored illustration of the chlamydozoön (not chlamydozoan, as entered in preface, text and index) of Prowazek and Halberstädter, a chapter devoted to special remedies, a full account of serotherapy as applied to eye diseases, and practical suggestions for the preparation of specimens for diagnosis in the search for microorganisms. The author furnishes plainly worded descriptions of the remedial measures and other subjects included in his thirty-one chapters, and has not burdened, obscured or padded the text with unnecessary matter. He has been fortunate in his selection of collaborators, who have written several attractive chapters. Among these are William N. Souter, who contributes the section on the "General Principles of Optics," and Alexander Duane, who writes on "Movements of the Eyeballs and Their Anomalies." The book has, however, the usual defects of its class—defective illustrations; and yet most of the colored plates and some of the black-and-white reproductions are a distinct improvement on those that do duty in the average text-book. Altogether, this treatise will be found to mirror the wide experience and independent views of its well-known author.

THE CAUSE AND CURE OF COLDS. By William S. Sadler, M.D., Professor of Physiologic Therapeutics, the Post-Graduate Medical School of Chicago. Cloth. Price, $1 net. Pp. 147, with illustrations. Chicago: A. C. McClurg & Co., 1910.

There is a need for just such a book as this, which can safely be recommended to the laity. It is sensible, comprehensive and yet not discursive. It is gratifying to see the author admit the danger of drafts in the cause of colds. The slogan of some, who are carrying the fresh-air theory to the extreme, "Drafts do not cause colds," is on the one hand dangerous to health and on the other destructive of the poor victim's confidence in the adviser. Sadler places drafts where they belong as exciting causes and lays just weight on the more important underlying causes of overeating, underelimination, inactive skins, and improper habits of bathing, clothing, etc. Prophylaxis and treatment are clearly given, with the reasons for their effectiveness, and the patient is frequently reminded of the conditions which are serious enough to make it wise to have a physician's advice.

GYNÉCOLOGIE OPÉRATOIRE. Par Henri Hartmann, Professeur de Médecine opératoire à la Faculté de Médecine. Paper. Price, 18 francs. Pp. 498, with 422 illustrations. Paris: G. Steinheil, 2, Rue Casimir-Delavigne 1911.

This volume is to be regarded as the personal experience of one of the leading operators in Paris rather than as a complete systematic exposition of the subject. Some topics are very inadequately considered and out of all proportion to their importance—for example, ectopic pregnancy. The book is therefore more fitted for specialists in gynecology than for students or general practitioners. The illustrations are numerous and for the most part satisfactory.

Medicolegal

Liability of Municipalities for Deaths from Typhoid Due to Negligence in Permitting Water Furnished to Become Contaminated

The Supreme Court of Minnesota holds, in an opinion filed December 23, 1910, in the cases of Delia Keever and Kate Flanagan, each as administratrix, against the City of Mankato, that the municipality was liable for its negligence in its private or corporate capacity, if it negligently allowed the water supply in its waterworks system to become polluted, causing deaths from typhoid fever.

The complaint alleged that the defendant, a municipal corporation, negligently allowed waters and the water supply in its waterworks system to become infected and polluted with poisonous substances "and large quantities of filth and sewage, all of which were saturated with the germs of diseases * * * and did carelessly, negligently * * * permit * * * filthy, foul and dangerous substances, common sewage and other filth to escape into and saturate the water supply"; that by reason thereof the water became imminently dangerous to life and health, of which the defendant had full notice and knowledge; that the plaintiff's intestate, a citizen and resident, used the water, contracted typhoid fever and died in consequence, etc. The defendant city demurred to the complaint, and its demurrer was sustained, but the order sustaining it is now reversed by the Supreme Court.

It is to be noted, the Supreme Court says, that the complaint in this case set forth not a mere action against the defendant to recover damages because the city failed to provide an adequate supply of pure water. The question here was whether the city was liable for, among other things, recklessly causing dangerous substances like common sewage and other filth to saturate its water supply and the wells, mains and appurtenances thereto.

The first essential question was whether the city was exempt because it was carrying out a governmental function, or whether it was liable because it operated the waterworks in its private or corporate function. The defendant naturally insisted that it was performing merely a governmental function. But the court holds that it was liable for its negligence in its private or corporate capacity, and was not exempt as carrying out a governmental function.

The defendant also insisted that the city could make no profit out of its operation of these waterworks. Doubtless this was in a general way true; at all events it might be here admitted. But the sequence which the defendant sought to draw did not at all follow: i. e. that therefore it should be exempted from all liability for mismanagement. For the city is liable for neglect in connection with its streets, sidewalks, and sewers, from which in their very nature no profit is or can be made. The city operates the waterworks for profit in the sense that it is voluntarily engaged in the same business which when conducted by private persons is operated for profit. The city itself makes a reasonable and varying charge. The undertaking is partly commercial. It is enough that the city is in a profit-making business.

Then the defendant insisted that it would not be sound policy to open the door and permit actions like the present to be maintained for the reason that as a result the defendant city as well as any other city would be liable at any time to have the same misfortune and would be bankrupted thereby. But the court must regard the defendant's figures as purely hypothetical. The question is one of general principles recognized by the law and not of the private views of court or counsel as to what the convenience or necessity of a particular city may dictate under particular circumstances. The general experience of public and private waterworks is that ordinarily their operation involves no such financial disaster as the defendant portrayed. It is obvious that a sound public policy holds a city to a high degree of faithfulness in providing an adequate supply of pure water. Nor does it appear why the citizens should be deprived of the stimulating effects of the fear of liability on the energy and care of its officials; nor why a city should be exempt from liability while a private corporation under the same circumstances should be held responsible for its conduct and made to contribute to the innocent persons it may have damaged.

The cases in which a city has been held responsible or irresponsible for damages by fire consequent on an inadequate supply of water are in a class of cases by themselves. From many points of view the rule holding the city liable for its negligence is not inconsistent with the rule there announced. The law does not undertake to achieve the impossible.

The defendant also urged that in no case has the city been held liable for negligence in the operation of its waterworks unless the act involved a trespass, or an invasion of a direct property right. Thus water escaping from a city reservoir runs onto another's property and does damage; this is trespass and there is liability. But if the escaping water should do damage to a person on a public highway there would be no trespass, but the law would recognize liability. Liability of the city is recognized in the case of streets and sidewalks which cannot properly involve trespass. Nor did the defendant show any reason for imposing liability in the case of trespass or the breach of insurance of safety which does not logically apply to cases of negligence. On general principles liability for negligence is more just and more generally recognized because it is based on culpability.

Lastly, the court holds that, on the assumption that the plaintiff's intestate could have maintained an action against the city had he lived, his administrator, or administratrix, could maintain an action under the Minnesota statutes.

Society Proceedings

WESTERN SURGICAL ASSOCIATION

Twentieth Annual Meeting, held at Chicago, Dec. 19-20, 1910

The President, DR. JOHN P. LORD, Omaha, in the Chair

Officers Elected

The following officers were elected: president, Dr. Amos W. Abbott, Minneapolis; vice-presidents, Drs. A. E. Halstead, Chicago and William J. Frick, Kansas City, Mo.; secretary-treasurer, Dr. Arthur T. Mann, Minneapolis.

Kansas City, Mo., was selected as the place for holding the next annual meeting, Dec. 18-19, 1911.

Desmoid Tumors of the Abdominal Wall After Operation

DR. E. WYLLYS ANDREWS, Chicago: I have seen only two cases of desmoid tumor in several thousand abdominal operations, both of which followed herniotomies. Most of the cases on record followed pregnancy or injury of the fascia above the inguinal region. Unlike keloids, true desmoids are found in the fascia and aponeurosis, especially of the abdominal wall. Histologically desmoid tumors are pure fibromata of the hard white form, showing coarse whirls of cut fibers macroscopically, like uterine myomata, and spindle cells microscopically with numerous fibrillæ. The cells show oval nuclei. Myxomatous and even malignant degenerations may occur. Desmoid tumors should be removed by operation inasmuch as the tendency is to grow larger and occasionally to start degenerative retrograde or malignant changes.

DISCUSSION

DR. J. CLARK STEWART, Minneapolis: The point of greatest interest in Dr. Andrews' report is the analogy which he shows as to etiology between desmoid tumors and keloids. I doubt whether the term "desmoid" should be used. Originally desmoids were tumors of the posterior sheath of the rectus muscle, and I must differ with Dr. Andrews that these tumors are found in the majority of cases in the upper part of the abdomen. The majority of the reported tumors I have run across have been found in the lower half of the abdomen. They grow inward, so that ultimately they become covered only by peritoneum. They attain considerable size. Quite a number of the reported cases of desmoid tumors are undoubtedly sarcomatous, and it is hard to differentiate a sarcoma under the microscope from the ordinary desmoid. The after history of these cases has shown several times that they were sarcomas, yet I do not think there is any question about the malignancy of desmoid tumors as originally described.

DR. A. E. HERTZLER, Kansas City, Missouri: It is easy, I think, to fix the pathogenesis of these desmoid tumors. Any tissue which contains a large amount of the original substance, will, when irritated long enough, short of suppuration, give rise to this fibrous tissue hyperplasia. One sees the same tumors subperitoneally about the duodenum. They are histologically very much the same. Microscopically they differ from fibroma in that they are long, with large oval vacuolated cells, many round cells, and polynuclears. This point is sufficient to separate the desmoid tumor from the fibromatous tumor or any tumor analogous to sarcoma.

DR. E. WYLLYS ANDREWS: As to the identity of keloid and desmoid, keloid, although it appears in scar tissue, never involves anything but skin. Keloids are confined to the skin, no matter how great the size they may attain, and are movable and free.

Non-Suppurative Osteomyelitis

DR. J. CLARK STEWART, Minneapolis: Three distinct clinical conditions may be classed under this title. First, cases of osteomyelitis, in which owing to the non-virulence of the invading germ or to unknown conditions increasing the resistance of the individual, no necrosis is caused. There is no pus, no sequestrum, but instead there is great overproduction of bony tissue. These cases are quite common, regularly recognized and properly treated. Second, cases of injury, generally fracture, in which a small piece of bone is entirely separated and dies, forming about it a shell of dense new bone in which it lies until absorbed, but without suppuration. These cases differ from those of the first class in that the irritant is not bacterial, but a fragment of the third class differs from the others in that it has an insidious onset. The disease is essentially chronic, but progressive and is diagnosed and treated as rheumatism. The etiology seems to be unknown. Text-books on surgery term this condition "chronic osteoperiostitis," which is a misnomer, for the periosteum is normal. The characteristics pathologically are the transformation of the marrow cavity into a multicellular labyrinth filled with a tissue which macroscopically resembles red marrow, and subperiosteal production of bone which results in a fusiform enlargement, the new bone being spongy. Symptomatologically these cases are characterized by an insidious onset, so-called rheumatic pains, worse in damp weather and at night, with slight evening rise of temperature. What would ultimately happen to a case of this kind without operation can only be surmised. It seems probable that the bone would remain enlarged and painful until stirred up by a fresh injury or infection, when there would be suppuration. The diagnosis is easy, after syphilis is excluded. Tuberculous osteomyelitis causes cold abscess and sinus formation, while periosteal sarcoma is generally more rapid and can be eliminated by skiagrams. Fusiform enlargement of a long bone, increasing very slowly in size, with point pressure tenderness in various places, and slight afternoon temperature, is a characteristic picture. The treatment consists in curetting the bone each way until normal bone is reached, cleansing, and filling the cavity with Moorhof's wax.

DISCUSSION

DR. D. S. FAIRCHILD, DesMoines, Ia: I have seen a number of cases of this kind which seemed to have arisen from some injury which had been inflicted to the bone, with involvement of the periosteum to some extent, but the trouble seems to extend throughout the entire shaft of the bone, the tibia being most commonly affected because it is more subject to traumatism. In the cases I have seen the bone has been dense. In the recent cases where the disease has not been progressing for a long time the bone is softer, and when the medullary canal is examined it is found almost entirely occluded by the proliferation of this bony tissue. These cases are more like cases of osteitis in which the inflammation has extended not only into the medullary canal and from the periosteum, but into the bone substance itself, and in the cases of long standing the bone has been very dense so that when a gutter was tunnelled out, it required a considerable amount of chiseling to do so.

DR. W. W. GRANT, Denver: The diagnosis of these cases is not made early, and that is why we do not see more of them. I believe that there will be ultimately death of the part and either pus formed or sequestrum, and an involucrum. We saw these cases formerly much oftener than now, because no one thought of operation until there were several sinuses leading to the canal. To-day the diagnosis can be made earlier, and if it is, operation should be done earlier when the patient will be saved several months and years of suffering, and will get well with a better leg. It is necessary to exclude syphilis and tuberculosis especially in arriving at a proper diagnosis.

DR. JAMES E. MOORE, Minneapolis: The principal difficulty in diagnosis is between non-suppurative osteomyelitis and chronic bone abscess. Therapeutic tests will eliminate syphilis. As a rule, syphilitic disease of the bone is bilateral, while non-suppurative osteomyelitis is usually unilateral. Chronic abscess of bone is likely to be limited to one end of the diaphysis, while the condition under discussion affects the entire diaphysis. The history of these cases is that of a low form of inflammation, with gradual enlargement, the principal symptom being pain, more particularly at night. When we operate, we find the main part of the bone proper eburnated, and the older surgeons amputated many of these limbs, showing how great the pain is at times. The modern treatment is that pointed out by the essayist.

DR. ARTHUR T. MANN, Minneapolis: I have had two cases of this type of osteomyelitis in which I used the Moorhof wax. One patient was a girl, thirteen years of age, who had symptoms for two years. She had the usual symptoms of chronic osteomyelitis in the lower third of the tibia, the pain being worse at night, and the temperature sometimes running up to 102 F. At the end of two years, when I saw her, she had a fusiform swelling at the junction of the lower third of the tibia, which was very tender. She cried at night on account of the severe pain. On opening this there was a mass more dense than cancellous tissue, but much thinner than ordinary cortical bone, so that the cortex had thinned out and the medullary cavity had filled in. In the center there was pale granulation tissue. This tissue was scooped out and the cavity filled with Moorhof's wax, and the usual closure of the wound made. There was healing by first intention. The pain stopped immediately following the operation. There had never been suppuration.

DR. WILLIAM H. MAGIE, Duluth, Minn.: In a recent case I had previously troughed the bone. Recurrence took place four or five months later, when Dr. Judd, of Rochester, operated. Later the patient returned to me with all the symptoms reestablished. I found the tibia enormously enlarged for fully eight inches, so that the case looked like one of sarcoma. I adopted the plan of chiseling down at the extreme end of this enlargement, splitting it, removing one-half of the tibia, then I applied skin direct on the raw surface of the bone that I had left, after removing half of the diameter of the tibia for fully eight inches. The wound healed by first intention, and the pain was relieved immediately. The patient has been well since and is working with a lumber crew.

DR. A. E. HERTZLER, Kansas City, Mo.: I do not think we would make a mistake if we called this a desmoid tumor of the bone. In the chronic sclerosing type of bone disease we have a milder form of infection which produces an exudate which is capable of being organized, and not as in the more acute types which form an exudate which is not organized. Rather unconsciously, I suspect, in the use of Moorhof's bone plug, you are imitating, in a measure, a very mild type of infection. The iodoform produces an exudate which is capable of being thrown down into fibrin, and it is by active hyperemia acting on the substance which produces an exudate, after forming fibrin, that healing is brought about.

DR. M. L. HARRIS, Chicago: In the cases belonging to the subgroup which has been described, there is no material enlargement of the bone, no condensation of the bony cortex. The disease usually affects the shaft of the bone. In the interior of the bone we find the red marrow which Dr. Stewart mentioned; it is very soft, almost semiliquid in some cases. These cases are characterized by extreme pain. The most interesting and typical case of that kind I saw was a man who had been treated for syphilis. He had visited several watering places in Europe, but returned to this country without being relieved. His pain was so severe that he was obliged to take morphin to afford relief. There was extreme pain in the shaft of the humerus. In these cases there is sensitiveness when the bone is percussed or when deep pressure is made. All that is necessary to do is to open the medullary cavity, remove a portion of the cortex and relieve tension.

(To be continued)

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Twenty-Third Annual Session, held at Nashville, Tenn., Dec. 13-15, 1910

The President, DR. W. O. ROBERTS, Louisville, in the Chair

Officers Elected

The following officers were elected for the ensuing year: president, Dr. Rudolph Matas, New Orleans; vice-presidents, Drs. Guy Leroy Hunner, Baltimore, and J. Garland Sherrill, Louisville; secretary, Dr. William D. Haggard, Nashville; treasurer, Dr. William S. Goldsmith, Atlanta.

Washington, D. C., was selected as the place for holding the next meeting, in December, 1911.

The Importance of Preserving the Gall-Bladder

DR. J. W. LONG, Greensboro, N. C.: An analysis of eighty-six cases convinces me of the value of retaining the gall-bladder. Cholecystectomy should be done in the presence of new growths, especially primary carcinoma; also in gangrene when the whole thickness of the bladder-wall is involved, but not otherwise, since I have had several recoveries following drainage for gangrenous mucosa of the bladder. Infection and empyema are only relative indications for doing cholecystectomy, most patients doing well under cholecystostomy. The cystic duct obstruction always present in empyema is gradually overcome under the influence of drainage, and after a varying interval of one to seven days, in one instance fifteen days, bile begins to discharge through the duct. Stone impacted in the cystic duct is only a rare indication for cholecystectomy. Even perforation cannot be considered an absolute indication for cholecystectomy. Drainage is second in importance only to removal of stones. Removal of stones cannot cure a pancreatitis, but drainage does. Drainage is the *sine qua non* for curing the patient of the widespread sequelæ of gall-bladder infection. It is prudent in doing a cholecystectomy to leave a forceps rather than a ligature on the cystic duct in order to provide for a free flow of bile, should untoward symptoms arise. The gall-bladder is not a storage pouch for bile, but rather is an expansion tank for the bile-duct system. Its removal is always followed by dilatation of the ducts, even the nub of the cystic duct compensating for the loss of the expansion tank. Pure bile injected into Wirsung's duct causes pancreatitis, bile mixed with the bladder mucosa does not, a cogent reason for preserving this function. The only avenue through which to treat chronic pancreatitis is the bile-duct system, preferably through the gall-bladder.

DISCUSSION

DR. THOMAS S. CULLEN, Baltimore: We have for several years made it a practice to drain all gall-bladders, except in those cases in which there is a suspicion of malignant disease, or in which there is empyema of such a character that it is impossible to drain satisfactorily, and the danger of removing the gall-bladder is not as great as that of infection from drainage.

DR. HOWARD A. KELLY, Baltimore: Under no circumstances would I remove a gall-bladder that is apparently sound or even moderately diseased which evidently may easily recover with drainage; nor would I remove a gall-bladder in which there is any suspicion of trouble in the common duct or any pancreatic disease. It is best to remove a gangrenous gall-bladder or one that is suspected to be malignant.

DR. J. GARLAND SHERRILL, Louisville: There has been a tendency to do too radical operations in this region. I have saved a number of gall-bladders that were full of pus by drainage. The reparative power of the tissues is very great and the opening becomes patent in a short time, and drainage of bile free.

DR. RANDOLPH WINSLOW, Baltimore: I operated in a case some time ago in which the duct was evidently obstructed; although bile reappeared, it did not flow. However, in the course of time nothing but mucus came from the external opening; the gall-bladder was distended, and bile did not pass. There occurred stricture of the cystic duct which necessitated a second operation for the removal of the gall-bladder.

DR. R. E. FORT, Nashville: In those cases in which we have a small contracted, rigid, friable gall-bladder, not larger than the finger, in which drainage cannot be instituted, I think it not only proper, but essential to do a cholecystectomy. There are cases in which we have common duct obstruction and it becomes necessary to do cholecystectomy, but in other cases it is not necessary to do this radical operation.

DR. BACON SAUNDERS, Fort Worth: In these old chronic gall-bladder cases it is necessary to continue drainage sometimes for six weeks in order to get satisfactory results.

DR. WILLIAM B. COLEY, New York City: When I remove a gall-bladder I institute drainage in the cystic duct and this does as much good to the pancreas as if we drained through the gall-bladder itself.

DR. J. W. LONG, Greensboro: In gall-bladder surgery, as in all other surgery, it is largely a matter of personal equation in deciding what is the best thing to do in the individual case.

Chronic Urethritis and Chronic Ureteritis Caused by Tonsillitis

DR. GUY L. HUNNER, Baltimore: Certain cases of chronic urethritis and chronic ureteritis heretofore of obscure origin are due to tonsillitis, although the great majority of these cases are due to gonorrhea, most of the cases of rheumatic urethritis of the older text-books being of this nature. Some cases can be traced to trauma and infection in childhood, or trauma and infection of non-gonorrheal character in the newly married. Other cases may possibly be due to onanism, and some may be classed as autoinfections, the short female urethra and the myriads of microorganisms normally present in the outer orifice being factors that would make autoinfection probable. After ruling out gonorrhea and these rarer causes of infection, there still remains a certain large percentage of chronic urethritis cases, which, in recent years I have associated with the rheumatic diathesis. In a large proportion of this class of cases the disease is due to infections or toxins from the tonsils, and the importance of this observation is appreciated only when we recognize that the urethritis cannot be cured permanently until the tonsils are thoroughly extirpated. Of the four operative cases, two had been treated for months without appreciable permanent benefit to the urethra, whereas after removal of the tonsils, one patient recovered promptly and has been well for fourteen months, after having had bladder trouble eight years. A second patient after removal of the tonsils, had an irritable spot in the base of the right fauces, which for seven months

gave periods of sore throat, accompanied by rheumatic symptoms in the knees and urethritis symptoms. For the past four months the throat symptoms have been absent, and the joints and urethra are apparently well. The third patient had been treated on two occasions in the past nine years with prompt recovery from the urethral symptoms each time. When last seen in March, 1910, the tonsils were clipped with the tonsillotome, and the patient reports a return of all her symptoms soon after going home. The fourth patient had a tonsillectomy after two urethral treatments, so that no conclusions can be drawn in her case as to the futility of urethral treatments, without removal of the tonsils. She has apparently recovered after having had bladder trouble three years, although only four months have elapsed since the tonsillectomy. The fact that acute prostatic abscess sometimes follows inflammation of the tonsils suggests a possible relationship between the tonsils and certain chronic urethritis cases in males. These cases are often associated with chronic prostatitis, in which gonorrhea can be excluded as the cause, and for which no definite etiology has heretofore been obtainable.

DISCUSSION

DR. J. M. MASON, Birmingham: All the cases reported have occurred in unmarried women in whom there is some possibility of nervous disturbance or reflex irritation of the urethra. I would like to ask Dr. Hunner whether he has had any cases in married women or in women whose sexual relations are normal.

DR. G. R. HOLDEN, Jacksonville: Did the discharge in these cases contain pus cells as seen by the microscope?

DR. HOWARD A. KELLY, Baltimore: The wife of a professional colleague had been under my care for fifteen years. She had more or less malaise. Careful examination revealed pus in the urine in varying amounts, but so far as the local conditions were concerned, the patient was without symptoms. She was in ill health. I catheterized and found pus coming from the left kidney. I dilated the ureter on that side, washed out the kidney, she got better, and after a few months returned for further investigation and treatment. She had for twelve years been troubled with rheumatism. She had enlargement of the joints. Last spring, in examining her, I found a large, tender kidney, with a good deal of pus in the urine. I drained this kidney, and did a plastic operation on the semilunar ureteral valves. I cut down on the fascia at the end of the ureter and drained from the side. She continued to suffer with rheumatism through the summer, although she experienced some relief from the drainage in the side. This fall I took out the kidney and her rheumatism disappeared.

DR. JOHN F. OECHSNER, New Orleans: It seems from the cases cited that the tonsils were at fault. I fear, however, that what has been said may lead to more or less universal tonsillectomy; if we regard the tonsils as always at fault in cases of urethritis, where the specific organism, the gonococcus more particularly, cannot be determined. I would, therefore, make a plea to educate the practitioner to be more specific in determining the nature of a local infection, whatever it may be, and find out exactly where the focus of infection is.

DR. GUY L. HUNNER, Baltimore: Some of my patients were married women. They did not have pus in the urine. You cannot milk pus out of the urethra as you can in an acute gonorrheal case.

The Best Method of Exposing the Bladder for Aggressive Operations by the Suprapubic Route

DR. HOWARD A. KELLY, Baltimore: I make a transverse crescentic incision above the pubis out to or even beyond the semilunar line on each side. I then separate the fascia from the muscles after the manner proposed by Pfannenstiel for operations on abdominal and pelvic tumors. In bladder cases, however, the abdominal cavity is not opened. The recti muscles, freed from their overlying fascia, are flaccid and easily drawn apart, thus affording a very broad exposure of Retzius' space. The bladder is brought into view by inflation with air and is widely incised in its transverse axis; thus, all parts of the organ are perfectly exposed to view and made easily accessible to operation. The whole question of dealing with extensive ulcers, papillomata, malignant disease and cystitis requiring resection is by this means greatly simplified. Further help in bringing the base of the bladder up within reach may be secured by introducing two fingers into the vagina in women and pushing the anterior wall upward. At the conclusion of the operation, the bladder is closed with fine silk or catgut sutures, the investing fascia is also carefully united with catgut or silk, and the rest of the abdominal wound closed, in suitable cases leaving a small drain extending down to or into the bladder.

DISCUSSION

DR. J. S. HORSLEY, Richmond, Va.: For more than a year I have been using the Pfannenstiel incision as a routine measure in all suprapubic cystotomies. It takes very little more time than the ordinary incision and it leaves the abdominal wall in a much better condition afterward.

DR. ERNST JONAS, St. Louis: The Pfannenstiel incision gives a very good view of the bladder. This incision was advocated for clean gynecologic cases where there is no pus in the pelvis, and not for cases in which the pelvis is badly infected.

DR. REUBEN PETERSON, Ann Arbor, Mich.: The Pfannenstiel incision is only suitable for clean cases. While the technic demonstrated by Dr. Kelly is fine for clean cases, I can see objection to this incision in suppurative cases.

DR. GEORGE H. NOBLE, Atlanta, Ga.: I have made use of the transverse or Pfannenstiel incision quite frequently in cases in which I did not expect to encounter a septic process, both in placing the uterus in its normal position and in opening the bladder. A point I want to bring out especially is, that in this dissection you can increase the opening very materially and satisfactorily by making a section of the lower ends of the recti muscles, where necessary. This is particularly the case where you want to open the pelvis to go into the peritoneum.

DR. ALEXANDER HUGH FERGUSON, Chicago: I can see how this method of exposing the inside of the bladder would be of great utility to those surgeons who practice suprapubic prostatectomy; also in removing papillomata to avoid the ureter. We must remember that there is no fascia behind the rectus muscle in this region, and that it retracts easily and acts as a bar to infection in the operative area.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Boston Medical and Surgical Journal

December 22

1 *Care and Management of the Tabetic Bladder. J. D. Barney, Boston.
2 *Case of Bilharziasis with Appendicitis. C. G. Lane, Woburn, Mass.
3 Tuberculosis Among the Philippine Scouts (Native Troops) of the United States Army. I. W. Brewer, U. S. Army.

1. **Care of Tabetic Bladder.**—According to Barney, trabeculation of the bladder in tabes is found in more than 80 per cent. of cases, and may occur before any symptom or other sign of vesical disturbance. In tabetic bladders it is found in the fundus and side walls only, in typical cases. It is more delicate and regular than that seen with mechanical obstruction. Probably it is due to a primary detrusor hypertrophy. Residual urine is found in more than 70 per cent. of the patients, often before any symptoms begin. In over 50 per cent. of all cases the urine is infected. Cystoscopy is generally a painless procedure, a fact which is of some diagnostic value. Urinary disturbances, variable in character, are observed in over 90 per cent. of all patients with tabes.

2. **Bilharziasis.**—Lane reports a case of both intestinal and genito-urinary bilharziasis, complicated with acute appendicitis. Sections of the appendix showed many bilharzia ova in the wall. A review of the reported cases brings out the fact that there are only five undoubted cases of the South

African *Bilharzia hematobia* among them. Investigation shows that the lateral spined ova may belong to one species of bilharzia and the terminal spined to another.

New York Medical Journal

December 24

4 The Law of Degeneracy in Its Relation to Medicine. C. P. Noble, Philadelphia.
5 Psychotherapy—Its Uses and Abuses. E. D. Fisher, New York.
6 Pulmonary Tuberculosis as Studied in the General Medical Dispensary. E. J. G. Beardsley, Philadelphia.
7 Ear Disease and Its Prevention. A. Bardes, New York.
8 Prevention of Abortion. C. Rosewater, Omaha, Neb.
9 Removal of the Faucial Tonsils Followed by Exophthalmic Goiter. C. J. Kœnig, Paris.
10 Liquid Air and Carbonic Acid Snow. J. D. Gold, Bridgeport, Conn.
11 The Dislocated Puerperal Uterus. W. L. Marsden, Burns, Ore.
12 Magic and Medicine: A Study in the Borderland of Light and Darkness. J. Knott, Dublin, Ireland.

Medical Record, New York

December 17

13 Salvarsan. M. S. Kakels, New York.
14 Intussusception of the Appendix. A. V. Moschcowitz, New York.
15 Typhoid Spine. N. B. Potter, New York.
16 *Stab Wound of the Heart. J. F. Erdmann, New York.
17 Spontaneous Rupture of a Glaucomatous Eyeball. B. Chance, Philadelphia.
18 Heart Stimulants Used During Fevers with a Recommendation of the Precordial Compress. W. L. Secor, St. Petersburg, Fla.
19 *Chancroids Due to Mercury Bichlorid. W. J. Robinson, New York.

December 24

20 Neurology in Zurich. E. W. Scripture, New York.
21 Immunity Reactions as Products of Natural Selection. R. G. Eccles, Brooklyn.
22 Probable Duration of Life. A. H. Stewart, Lawton, Okla.
23 *Treatment of Paralysis Agitans with Parathyroid Gland. W. N. Berkeley, New York.
24 A Case of Pyloric Obstruction. A. Goldman, New York.
25 A Simple Clinical Method for Measuring the Diameter of the Pupil. T. A. Williams, Washington, D. C.

16. **Stab Wound of the Heart.**—A man received a stab wound in the chest, made by a knife three-quarters of an inch wide by 6 inches long. The puncture—three-quarters of an inch long—was on the right side of the chest, 1¾ inches to the right of the median line, penetrating the fifth costal cartilage obliquely, and splitting its lower three-quarters. The distance from the left nipple was 6 inches to the right of the median line and on a line 1¼ inches below the right nipple. The patient was received at the hospital shortly after the injury, stating that he struck his assailant a blow and knocked him down subsequent to his being stabbed. His condition at the time Erdmann saw him was one of profound shock. The heart sounds were distant and almost imperceptible. The patient complained of constant abdominal pain, and on palpation he was found to be exceedingly tender on the right half of the abdomen. On percussion, dulness and flatness extended over this entire region, being particularly marked in the upper half.

An exploration was begun at the angle between the seventh costal cartilage and the ensiform process. On reaching the peritoneum a deep blue-black appearance, such as is seen in extrauterine pregnancy with rupture, was observed. The exploration was then extended 2 inches further in the abdominal wall and the peritoneum opened, when the dark blue mass was seen to be the liver, driven downward 4 inches below the costal margin. It was deeply cyanotic. The peritoneal cavity and the dome of the liver were explored and nothing found to indicate puncture. The seventh costal cartilage was then raised, the diaphragmatic musculature was detached, and the cartilage cut at its juncture with the rib. The sixth, the fifth, and the fourth were also cut through. A retractor was placed on the cartilages, the skin raised from the sternum at the upper limit of the incision, and the sternum cut through at the upper limit of the incision with a pair of bone-cutting forceps. On raising the flap, a hole admitting the index finger was found penetrating the pericardium, and a similar hole was found in the right ventricle. An exposure was made 4 inches in length. The palm of the hand above and the thumb below grasped the heart, while the index finger was retained within the ventricle. A curved needle, threaded with No. 2 plain catgut, was then placed down to the heart, and during a systole a puncture was made, irrespective of penetrating the cavity or not. As soon as the needle had pierced one side of the incision, the finger was withdrawn and the needle made to make its exit from the opposite side. A knot was tied and the heart held dangling from this suture. The subsequent stitches—eight or ten in number—were readily placed, one more being placed in the line of the heart wound proper, and two more rows placed after the manner of Lembert. A long cigarette drain was placed in the pericardial cavity, and the incision in the pericardium closed up to the emergence of the drain, which was led out at the angle of the seventh costal cartilage and the sternum. Catgut stitches were taken in the costal cartilages between them and the ribs. Nothing was done to the sternum, except to hold it in place by the dressings after the skin wound was sutured. The patient was back in bed in about thirty minutes, and was out of bed and well on the fourteenth day.

19. **Chancroids Due to a Peculiar Cause.**—In Robinson's case a bichlorid tablet inserted in the vagina proved sufficiently irritating to cause the formation of ulcers.

23. **Treatment of Paralysis Agitans.**—Berkeley is of the opinion that paralysis agitans has all the marks of a chronic toxemia. The symptoms following parathyroidectomy are remarkably like those of paralysis agitans. In cases of myxedema and exophthalmic goiter, paralysis agitans has not infrequently occurred as a complication or sequela. Of fourteen reported autopsies on paralysis agitans, eleven showed negative parathyroid glands, three showed distinct pathologic changes; and lastly, a remarkable percentage of patients with paralysis agitans treated with properly identified fresh gland, or a properly made extract, have been greatly benefited. Berkeley's first patients were treated with commercial parathyroid gland. This worked well in a few cases, but was found so variable and uncertain in its action that it had to be given up. He next tried a preparation of properly identified gland rubbed up in the crude fresh state to a dry powder with milk sugar. This was distinctly better, but still seemed to be variable and unstable. Later, he tried a nucleoproteid solution of the parathyroid made up by Beebe's method and preserved with a few drops of chloroform in the bottom of each bottle. This has still further raised the percentage and degree of improvement, but it precipitates rapidly, and is susceptible to damage from temperatures above 5 C., therefore hardly admitting of transportation to any great distance. His latest process is this: The nucleoproteid extraction process (Beebe's method) is adhered to generally, but all the preliminary steps are hurried, and the precipitated nucleoproteid is not redissolved, but quickly dried in a draught of cold air; so that within eight or ten hours after the warm glands leave the bullock a minute amount of smooth yellow powder is obtained which stands physiologic tests admirably, is stable, easily handled, and does not require a freezing temperature (though for safety's sake it is recommended to keep it on ice). The powder is rubbed up with milk sugar as a menstruum and is placed in sealed containers.

American Journal of Public Hygiene, Columbus, Ohio

November

26 Hygiene of the Swimming Pool. J. W. M. Bunker.
27 Spread of Scarlet Fever and Diphtheria in Schools. C. V. Chapin, Providence, R. I.
28 Water Analysis and the Public Health. D. G. Revell, Edmonton, Alberta.
29 Functions of a Public Health Laboratory. D. G. Revell, Edmonton, Alberta.
30 Germicidal Value of a Few "Commercial" Coal-Tar Disinfectants. F. H. Slack and E. M. Wade, Boston.
31 A New Form of Anaerobic Jar. S. H. Ayers, Washington, D. C.
32 Social Economics and Public Health. E. Seidel, Milwaukee.
33 Cholera. M. J. Rosenau, Boston.
34 Infantile Paralysis. R. W. Lovett, Boston.
35 Municipal Sanitation. C. V. Chapin, Providence, R. I.
36 Personal Hygiene. P. G. Stiles, Boston.

American Journal of Medical Sciences, Philadelphia

December

37 *Pleurisy as a Complication and a Sequel of Lobar Pneumonia; Its Diagnosis and Treatment. J. M. Anders, Philadelphia.
38 *Use of the Soy Bean as a Food in Diabetes. J. Friedenwald and J. Ruhräh, Baltimore.
39 *Auscultatory Signs of the Respiratory System. J. H. Barach, Pittsburg.

40 *Clinical Method of Estimating the Coagulation Time of the Blood. R. D. Rudolf, Toronto, Canada.
41 *Clinical Significance of Transitory Delirium Cordis. G. H. Fox, Ann Arbor, Mich.
42 Erythremia or Polycythemia with Enlarged Spleen and Chronic Cyanosis. E. C. Seufert, Chicago.
43 *Tuberculosis and Menstruation. D. I. Macht, Baltimore.
44 Smooth Atrophy of the Base of the Tongue. D. Symmers, New York.
45 Syndrome of Sphenopalatine Ganglion Neurosis. G. Sluder, St. Louis.
46 *Clinical Value of the Cammidge Reaction. L. C. Kinney, Philadelphia.
47 Determination of Chlorin and the Purin Bodies in Urine. R. W. King, Las Animas, Colo.

37. Abstracted in THE JOURNAL, July 9, 1910, p. 155.

38. **Soy Bean as a Food in Diabetes.**—The most striking point about the soy bean is the fact that it contains no starch, or, at least, a very small quantity, which is strange when one considers it resembles the various beans very closely, and all other varieties are extremely rich in starchy materials. As it contains no starch, it is exceedingly difficult to make a bread without the introduction of a certain amount of some other flour, but Lecerf, a French pharmacist, is said to have made a bread which resembled somewhat ginger bread, which was not at all disagreeable, and which contained no starch whatever or a very small percentage. Lailleux is said to have treated a number of cases of diabetes in Algiers with the soy bean with admirable results. The experience of Friedenwald and Ruhräh with the soy bean in diabetes extends over a series of eight cases. The beans may be taken as a vegetable by soaking them for from twelve to sixteen hours, until the skins come off, and stirring until the skins rise to the surface and can be removed. They are then boiled in salt water or with bacon until soft, and seasoned with pepper, salt and butter and served hot. When the bean is not available the gruel flour from the soy bean is even more serviceable. Each ounce of this soy gruel flour yields about 13 grams of protein and 120 calories, and there are several ways in which it can be used: 1, As a gruel; 2, in broths; 3, in making biscuits.

In the study of the authors' eight cases of diabetes, the patients were placed, first, on an unlimited diet; second, on the restricted (usual diabetic) diet; and third, on restricted diet, together with the soy bean. The soy bean replaced largely the gluten of wheat bread, while the patient still remained on the usual diabetic diet. In nearly every instance there was a marked diminution in the glycosuria.

39. **Auscultatory Signs of the Respiratory System.**—Barach calls attention to certain findings relative to the conduction of auscultatory sounds by the bony framework of the chest. The first observation is, that typical bronchial breathing may be heard at the acromion end of the clavicle. By placing the bell of the stethoscope over this area and having the patient make deep respiratory efforts, typical bronchial breathing will be heard. Not only is bronchial breathing heard, but the spoken and whispered voice sounds are transmitted clearly. These auscultatory findings are present in nearly all chests and are heard especially well in those persons who do not have a thick subcutaneous and fatty covering. In the normal individual they are usually heard with more distinctness on the right side than on the left. Very often the bronchial sound is transmitted to, and may be distinctly heard by applying the stethoscope over the occipital and other bones of the cranium. It may also frequently be heard below the fifth dorsal vertebra. These observations prove conclusively to Barach that the bony framework of the chest is capable of transmitting auscultatory signs from points near their source of origin to distant points on the contour of the chest.

40. **Coagulation Time of the Blood.**—The chief object of Rudolf's communication is to advocate and describe a method of measuring the coagulation time of the blood which is convenient clinically and which seems to give reliable results. Thin glass tubes 1.5 mm. in diameter and about 7 inches in length are used. A pint thermos bottle is employed, and its ordinary cork is replaced by a rubber cork perforated in three places. In these perforations rest two brass tubes, 7 inches long and just large enough in caliber to hold easily the glass blood-tubes. The third perforation in the cork contains a thermometer. The apparatus rests on its side on a special stand, which prevents it rolling about. The bottle is filled with water at the temperature at which it is desired to work, say 20 C., and the cork put in position. The temperature of the contents will remain for fully an hour at the same point in a room of 55 F. or more.

The back of the finger or thumb near the nail is cleansed with soap and water and then with alcohol. As soon as it is dry the digit is wrapped about with a piece of twine loosely and at once punctured, the exact time of puncture being noted. Two glass tubes are partially filled from the same drop, the blood being made to run nearly to the far end of each, and each as filled is placed in a brass tube of the thermostat, the first in that to the left and the other in that to the right. Then the protruding ends, which are the ends at which the blood entered the tubes, are sealed at one's leisure with a spirit lamp. If the test is being made on an apparently healthy individual, in about five minutes the first tube is drawn out of its holder by the left hand (which is covered with a thick glove, in order that the heat of the fingers may less affect the tube) and touched with a glass-file and broken across between one's fingers and thumbs, and the broken ends are slowly separated. Probably the blood-column also breaks across sharply, if one may so speak of a column of fluid. The tube is at once replaced in the thermostat. In half a minute the second tube is removed and treated in the same way. Soon on breaking the tube across and separating the ends a thread of fibrin appears between the broken ends. At once the tube is broken farther on, and probably the thread of fibrin again appears. Very rarely a thread appears at the first break and not at the next one. This would be counted as a negative finding, and the tube would be at once replaced in the thermostat and tried again in fifteen seconds. If one is careful to begin the breaking at the first blood which entered the tube, such a thing seldom happens. One of the alternating tubes having given a positive finding, the other one almost certainly will do so in the next half minute, but if not, then usually in the next. With quick working one can try them every quarter of a minute, but the half-minute intervals give more time to make sure that a given tube has really coagulated, as it can be broken several times before the next one is due.

The temperature at which the experiment is carried out makes a marked difference in the results. This difference is about one minute for each degree centigrade. At 20 C. (68 F.) the average coagulation time is about eight and one-half minutes. Age (beyond early childhood) and sex seem to have no influence on the coagulation time. A diurnal variation does not seem to occur; possibly there is a slight increase in coagulability as the day advances, but this is probably due to experimental error. There appears to be a slight tendency to decrease in the coagulability about two hours after a meal, but it is too slight to put much weight on. Calcium lactate does not appear to have any marked influence on the coagulation time of the blood of normal individuals. Citric acid appears to have a slight retarding influence on the coagulation. Considerable variation occurs in the coagulation time of a healthy individual from time to time, the nature of which is not evident.

41. **Transitory Delirium Cordis.**—Of six patients in whom transient attacks of delirium cordis were observed by Fox, five eventually developed the permanent type of irregularity. Many features of the attacks themselves would suggest a nervous condition, especially the onset under excitement and the complete recovery between attacks with no demonstrable heart changes. The prognosis, however, should be guarded and efforts made to avert the onset of permanent irregularity, which is practically always accompanied by symptoms of cardiac insufficiency.

43. **Tuberculosis and Menstruation.**—The histories of nearly all the female patients between the ages of 12 and 45 years, about 1,600, applying for treatment to the Phipps Dispensary of the Johns Hopkins Hospital were analyzed by Macht. Over one-half of the patients, or 51.6 per cent., at the time of admission gave a history of no change in menstruation at all; 27.3 per cent., or over one-fourth, gave a history of amenor-

rhea, or more or less scanty flow or suppression; and 4.6 per cent. complained of a more profuse flow than ordinarily, without any history of uterine or adnexal disease. Of the patients under 20 years, 32.5 per cent. and 39 per cent. of those between 20 and 30 years of age, making a total of 71.5 per cent., or nearly three-quarters of all the patients with amenorrhea below 30 years of age; 45.8 per cent. of the amenorrheic patients, or nearly one-half of them, were in the first stage of the disease; 41.9 per cent of the patients were ill for not more than six months. Taking these three data together, it will be seen that amenorrhea is, therefore, a sign of considerable diagnostic importance. Macht has repeatedly been led to suspect tuberculosis in young patients by this sign alone. Menorrhagia, when it does occur, is an early symptom, preceding amenorrhea, and unless carefully inquired for, may be easily overlooked. For this same reason it is a valuable diagnostic sign.

The course of events is usually something like this: A patient's menses being regular and normal, begin without apparent cause to grow more profuse and of longer duration. This continues for a few months, and is followed by a gradual development of amenorrhea, which may eventually end in complete suppression of the menses. The effect of the tuberculous process on the menstrual function is manifested chiefly in changes in the menstrual type. (a) Tuberculous patients may menstruate regularly to the end, especially after the age of 35. (b) The patients may have amenorrhea, passing into complete suppression of the menses. (c) An appreciable number, 4.6 per cent., may have menorrhagia preceding the amenorrhea. The age of the patient is the most important factor in these conditions. Some cases of dysmenorrhea are of a purely tuberculous origin, and are relieved by tuberculin treatment. The effect of treatment in general is to restore a normal type of menstruation. The changes in the menstrual type are of considerable diagnostic and prognostic value. The influence of menstruation on the tuberculous process is manifested by aggravation of all symptoms, and accentuation of physical signs. The effects of ovulation may continue after the menstrual flow has been suppressed.

Periodic variations in temperature are very common, occurring in probably 50 per cent. or more of all cases, and are of diagnostic and prognostic value. These rises in temperature may be (a) premenstrual, (b) menstrual, (c) postmenstrual, (d) intermenstrual. Periodic hemoptyses and other hemorrhages in tuberculous patients are more common than is generally assumed. These hemoptyses may occur simultaneously with the menstrual flow, or may take the place of the menstrual flow. True vicarious menstruation does occur, but it is exceedingly rare, so that in most cases of vicarious hemoptysis a tuberculous lesion is to be suspected. Tuberculin should not be administered at the time of menstruation. The evil effect of the menstrual processes on the patient's constitution can be minimized by proper treatment.

46. **Clinical Value of the Cammidge Reaction.**—In 105 cases with a negative Cammidge reaction there was no evidence of disease of the pancreas; seventy-five of these cases came to operation at which the gall-bladder region was explored, and in them palpation of the common duct made it necessary for the operator to feel the consistency of the pancreas. In these cases the pancreas was recorded as normal to palpation in twenty cases, but in the remaining fifty-five no note was made as to its condition; thirty patients not operated on were not considered from clinical examination to have pancreatic disease. A lesion of the pancreas was diagnosticated in fifteen patients who gave negative findings; eleven individuals with chronic interstitial pancreatitis were found at operation in which the pancreas was stated to have been abnormally enlarged, firm, or nodular; two patients with carcinoma of the pancreas (one diagnosis being confirmed at postmortem examination) and one with acute pancreatitis failed to give positive "C" crystals. The single case of cyst of the pancreas gave a negative reaction before operation, but twenty-one days after, while the rubber-tube drainage was still in place, the reaction was decidedly positive. In thirty-four cases the Cammidge reaction was positive. Of these, fourteen patients came to operation and one to postmortem examination. The diagnosis of chronic pancreatitis was confirmed by palpation in seven cases, and in one case of acute exacerbation of a chronic pancreatitis the diagnosis was confirmed microscopically after death. In two cases the pancreas was normal to palpation, that is, one case of chronic cholecystitis and one case with a stone occluding the ampulla of Vater. No note was made of the condition of the pancreas in the four other cases in which the patients were not operated on—subhepatic abscess following perforation of the gall-bladder, cholelithiasis with 258 stones in the common duct, empyema of the gall-bladder, and abdominal adhesions. Twenty patients with a positive reaction were not operated on. In seven cases a lesion of the pancreas was diagnosticated clinically as follows: three cases of chronic pancreatitis, one of acute pancreatitis and one of carcinoma of the stomach and pancreas.

The remaining thirteen patients were not considered to have pancreatic disease. These cases were as follows: Neurasthenia, catarrhal jaundice, four cases of cholelithiasis, chronic cholecystitis, acute cholecystitis, diabetes, epigastric distress (not diagnosticated), duodenal ulcer, carcinoma of the stomach, and carcinoma of the liver. Thus, in the thirty-four cases in which the Cammidge reaction was positive, a diagnosis of pancreatic disease was made in fifteen cases, or 44 per cent. The positive reaction in 33 per cent. of the patients with carcinoma of the pancreas agrees with Cammidge's report. Kinney has had cases of both acute and chronic pancreatitis in which the Cammidge reaction has been negative. There were forty-three cases in the series which came to operation or postmortem examination, in which the condition of the pancreas was definitely recorded. The pancreas was found to be normal in twenty-two cases, twenty of which gave a negative, and two a positive Cammidge reaction; eighteen cases of chronic interstitial pancreatitis gave eleven negative and seven positive findings. The acute exacerbation of a chronic pancreatitis gave a positive reaction, while the cyst and carcinoma were negative.

Laryngoscope, St. Louis

November

48 Infectious Diseases of the Labyrinth. H. Neumann, Vienna.
49 Osteomyelitis of the Temporal Bone. C. W. Richardson, Washington, D. C.
50 Exfoliation of the Bony Tympanic Wall Including the Major Portion of the Semicircular Canals. J. A. Stucky, Lexington, Ky.
51 Bacteriologic Examination of the Tonsillar Crypts at the Manhattan Eye, Ear and Throat Hospital, New York. J. G. Dwyer and Miss Gignoux, New York.
52 Subcutaneous Surgical Emphysema. B. D. Parish, Philadelphia.
53 Foreign Body Removed from the Bronchus. S. Yankauer, New York.
54 Mishaps in Tracheobronchoscopy and Esophagoscopy. S. H. Large, Cleveland.
55 Bismuth Paste in Chronic Suppurative Diseases of the Nose, Accessory Sinuses, Ears, and Mastoid Process. J. C. Beck, Chicago.
56 Complicated Cerebral Case with Pathologic Findings. C. F. Welty, San Francisco.

Annals of Surgery, Philadelphia

December

57 Treatment of Scalping Accidents. J. S. Davis, Baltimore.
58 Responsibility of the Tonsil in Tuberculous Adenitis. F. S. Mathews, New York.
59 *Treatment of Tuberculous Glands of the Neck. E. S. Judd, Rochester, Minn.
60 Metallic Foreign Bodies in a Bronchus. G. R. Fowler, Brooklyn, N. Y.
61 *Sarcoma of the Clavicle: End-Results Following Total Excision. W. B. Coley, New York.
62 Transgastric Excision of Calloused Ulcer of the Posterior Wall of the Body of the Stomach. W. J. Mayo, Rochester, Minn.
63 *Relation Between Appendicitis and Disturbance in the Gastro-duodeno-Hepatico-Pancreatic Physiologic System. W. C. MacCarty and B. F. McGrath, Rochester, Minn.
64 *Technic of Appendicostomy. F. C. Yeomans, New York.
65 Anomalous Renal Arteries and Their Relation to Hydronephrosis. A. L. McDonald, Grand Forks, N. Dak.
66 *Anatomy and Treatment of Undescended Testicle. A. V. Moschcowitz, New York.
67 Resection of the Male Rectum for Cancer. W. C. Lusk, New York.
68 Fracture of the Tarsal Scaphoid. W. R. MacAusland and B. E. Wood, Boston.

59. **Tuberculous Glands of Neck.**—During the past fifteen years there have been performed at the Rochester clinic 668 operations for complete excision of glands of the neck, sixty-two operations for partial excisions and curetting, and twenty-four excisions of tuberculous glands in the axilla in patients

who also had tuberculous cervical glands. In all, 649 patients were operated on, on one side at a time. Of these, nineteen have since died of pulmonary tuberculosis, and nine have died of tuberculous lesions elsewhere. Ten of the patients had pulmonary tuberculosis at the time of the operation. In operating on these individuals, it has been the aim to do a thorough and radical excision of the groups involved. Having made the incision from the mastoid to the clavicle, the skin and platysma are reflected well forward and backward. The sternomastoid is not cut except a few posterior fibers of its upper attachment on the mastoid process. The entire posterior border of this muscle is freed and the fascia dissected from it. The dissection is started at the lower angle underneath the clavicular attachment. The omohyoid pulley is exposed and this is the lowest point of the dissection. The glands are all left together in the fascia as much as possible. Care should be taken to avoid important nerves. Lymphatic glands within the parotid should be shelled out in a manner that will not interfere in any way with the branches of the seventh nerve.

Having completed the dissection, if caseous material has soiled the wound, it should be mopped out with tincture of iodin well diluted with water; or, as suggested by von Eiselsberg, the entire wound may be mopped for an instant with boiling water. Drainage should be provided through a stab incision; preferably, a small rubber tube split spirally. This drain is for the purpose of withdrawing serum and is removed in from 24 to 48 hours. The platysma muscle is carefully sutured with fine catgut, and the skin edges approximated by a subcuticular suture approximating as much of the cut of the skin as possible, giving the appearance of a ridge. A rather small, snugly fitting gauze dressing is used. The next day the patient is gotten up and encouraged to move the head freely to prevent any stiffening of the muscles. From this time general outdoor treatment is advised. In this series of cases there has been no mortality due directly to the operation. One patient died a few weeks after the operation of general tuberculosis, and a second died in about three months from diffuse sepsis.

61. **Sarcoma of the Clavicle.**—In view of the favorable results obtained in the few cases of sarcoma of the clavicle, and the much larger number of cases of sarcoma of the long bones in general, by the use of the mixed toxins of erysipelas and *Bacillus prodigiosus* immediately after operation, as a prophylactic, Coley believes that such use would seem to be strongly indicated as a routine measure. The histories of sixty-three cases are given in full.

63. **Appendicitis and Associated Disturbances.**—The possibility of an etiologic relationship between the appendix and pathologic conditions in the stomach, duodenum, liver, bile passages and pancreas arose as the result of an investigation by MacCarty and McGrath of the embryology, anatomy and physiology of these organs in view of clinical experience and pathologic findings in studying the material from 216 gastrectomies, 365 cholecystectomies, 5,000 appendectomies, three duodenal ulcers and the experimental experience of Cannon, Litthauer, Tsunoda, Roger, and others, all of which, when taken together, strongly suggest that the appendix is at least a part of the etiology of conditions which have been and are being treated as local conditions but which may possibly arise secondarily. Autopsy has shown that duodenal ulcers when they occur at or near the papilla of Vater are sometimes, if not always, associated with cholecystitis, and occasionally with chronic interstitial hepatitis (cirrhosis). Clinical experience presents strong evidence that there are gastric disturbances which are relieved and often completely dissipated by the removal of the appendix. Examination of the appendices removed in association with "pyloric spasm," gastric and duodenal ulcers, cholecystitis and cholelithiasis shows that there is a higher percentage of appendices with partially or completely obliterated lumina in all of these conditions, than at general autopsy or at operations for appendicitis. It was found that of 365 patients in whom cholecystectomy was performed, 13 per cent. gave definite histories of pain and soreness in the region of the appendix. In fifty-nine of these patients with cholecystitis the appendices were removed and 69 per cent. showed undoubted gross or microscopic evidence of inflammation, varying from a chronic catarrhal condition to complete obliteration and periappendicitis.

In the examination of 2,000 appendices with the histories, 52 per cent. of 175 patients with cholecystitis with and without stones gave histories of pain in the region of the appendix. In 1,147 histories, which include all the cases of appendicitis and appendices removed during operations, for conditions other than cholecystitis with or without stones, there was a history of pain in the epigastrium or right hypochondrium in 13 per cent. In 9.4 per cent. there was pain in the abdomen and in 14.6 per cent. pain in the abdomen was radiated to and became localized in the region of the appendix.

64. Abstracted in THE JOURNAL, July 30, 1910, p. 430.

66. **Treatment of Undescended Testicle.**—Moschcowitz has operated on eighteen patients by the Bevan method. Primary union resulted in every instance; there is no recurrence of the hernia; the testicle is freely movable and in the very bottom of the scrotum. In other words, he says, all these patients can be legitimately regarded as completely cured, so far as the descent of the testicle and the hernia is concerned.

American Medicine, Burlington

November

69 The Cystoscope in Practice. E. W. Pinkham, New York.
70 A Life of Intense Suffering and of Unrealized Aims Due to Eyestrain. G. M. Gould, Ithaca, N. Y.
71 Goiter and Its Treatment. J. W. Solow, Brooklyn, N. Y.
72 Myxosarcoma of the Right Frontal Lobe; Extensive Degeneration in Cord. G. E. Price, Philadelphia.
73 A Sanatorium School for Consumptives. D. L. Sohn, New York.
74 Physiologic Action and Standardization of Digitalis. O. Hensel, New York.

Cleveland Medical Journal

December

75 *Psychoses Associated with Acute Infectious Diseases. A. M. Barrett, Ann Arbor, Mich.
76 Trend of Modern Research on the Nature of Ferment Action. J. J. R. Macleod, Cleveland.
77 Lacerations of the Cervix. N. C. Yarian, Cleveland.
78 Vaccine Therapy in Lung Abscess. P. A. Jacobs, Cleveland.
79 Eight Cases of Syphilis Treated with Salvarsan (606). W. T. Corlett, Cleveland.
80 *Surgical Approach to the Lower Ureter. F. C. Herrick, Cleveland.
81 Method of Preparing Lantern Slides in Color. A. H. Tashjian, Cleveland.

75. **Psychoses in Acute Infections.**—Five cases reported by Barrett give some idea of the multiformity of the clinical symptomatology which may occur in the psychoses caused by infectious diseases. Common to the cases given only is the disturbance of the consciousness. A review of a large number of cases reported as psychoses of acute infectious diseases shows that there are no specific clinical symptoms which distinguish the group of psychoses from non-infectious conditions. The most that can be said is that it is true in general that at the same stage of an infectious disease, psychoses of the same type are prone to occur. The clinical picture is greatly influenced by the intensity of the infection. The more acute the infectious disease, the more turbulent are the physical symptoms. This is borne out in Barrett's cases. The only case in which definite delusions were present ran a subacute course of seven months, while the case in which there was the greatest excitement and most severe disturbance of consciousness was one of puerperal infection which ran its course in twelve days. There is a certain harmony in this series of cases between the clinical course and the pathologic findings. The case which ran the longest and mildest course showed in the brain the less acute changes. Barrett did not find in this case the same severe distinctive process affecting the nerve cells as in the other cases. The most severe changes in the cortex were found in a case of delirium in tuberculosis. Two cases of typhoid psychoses are specially interesting from the similarity of the neurologic disturbances in each, and one of these, by reason of the occurrence of the mental disturbance nearly ten weeks before the physical signs of the disease were observed. The other typhoid case has a point of interest in the occurrence of an infectious psychosis without fever, yet with the anatomic alterations which can be experimentally produced by increasing the body temperature.

80. **Surgical Approach to Lower Ureter.**—The incision recommended by Herrick is made on an imaginary line drawn from the inner lip of the anterior superior spine to a point above the opposite spine of the pubis, say the external abdominal ring, starting from 1½ to 2 inches from the anterior superior spine and extending from 3 to 3½ inches to the rectus muscle. This strikes the edge of the rectus from 1 to 1½ inches above the entrance into it of the deep epigastric artery. The tendinous external oblique is split in the line of the incision, the internal oblique and transversalis are likewise split parallel to their fibers and parallel to the nerve trunks which lie between them. The peritoneum is dissected up with the fingers from the side and floor of the pelvis. A broad retractor, placed at the lower end of the incision, gives good access to the deep pelvis. In finding the ureter, the finger is carried to the bifurcation of the common iliac and then turned up against the under surface of the peritoneum where, closely adherent to the peritoneum and covered by some of its reflected fibers, will be felt the ureter. By cutting the fibers the ureter is separated from the peritoneum for an inch or two, a strip of gauze is passed behind it and gentle traction made when the ureter will stand out as a ridge extending to the base of the bladder. Herrick has, without difficulty, removed stones impacted just above the bladder but inaccessible through the cystoscope and feels that since all structures are returned to their normal state this route is an ideal one.

Journal of the Delaware State Medical Society, Wilmington

December

82 Home Treatment of Pulmonary Tuberculosis. G. B. Pearson, Wilmington.

Journal of the Arkansas Medical Society, Little Rock

November

83 *Modern Methods of Treatment for Severe Prolapse of the Uterus. H. L. Crossen, St. Louis, Mo.
84 *Infant Mortality. J. T. Clegg, Siloam Springs.
85 *Acute Otitis Media and Mastoid Abscess in Children. R. Caldwell, Little Rock.

83, 84 and 85. Abstracted in THE JOURNAL, June 11, 1910, pp. 1991 and 1992.

Texas State Journal of Medicine, Fort Worth

December

86 *Use of Drugs as Stimulants in Accidents Occurring During Anesthesia. O. H. Plant, Galveston.
87 *Position for Combined Abdominal and Pelvic Outlet Operations. A. C. Scott, Temple.
88 Organization and Public Education. T. C. Merrill, Colorado.
89 General Anesthesia. F. B. Bryan, Childress.

86. **Use of Drugs as Stimulants in Accidents.**—Of the drugs investigated by Plant, a combination of cocain and strychnin was by far the most efficient in producing recovery; nine out of twelve of the animals operated on recovered without any other restorative measure than the intravenous injection of these drugs. In ether anesthesia, this was the only series in which more than one animal was restored. This fact is not hard to explain, because in ether anesthesia the respiration is depressed to a much greater extent than the circulation, so that a respiratory stimulant is the chief need. The average fall in mean pressure in twenty-three experiments where ether was administered amounted to 23 per cent., while in twenty-four experiments in which chloroform was used it amounted to 74.6 per cent., more than three times as much; the force of the heart (pulse pressure) was diminished 1.7 per cent. in ether anesthesia, and 62.8 per cent. in chloroform anesthesia. These figures show that in ether anesthesia the circulation was not greatly depressed in these experiments at the time the respiration stopped, and that a respiratory stimulant is the prime necessity, so far as drugs are concerned in ether anesthesia.

Plant regards cocain as probably the most powerful of the respiratory stimulants and combined with strychnin, which stimulates both respiratory and cardiac centers, it meets the indications better than any of the stimulants commonly employed in ether and chloroform anesthesia. In all accidents during anesthesia, artificial respiration is by far the most important and efficient restorative, and the drug treatment is only accessory. This is especially true in ether narcosis, where respiration is depressed to a much greater extent than the circulation. Neither adrenal preparations nor atropin, nor a combination of the two, had any marked beneficial effect in ether anesthesia. In chloroform anesthesia, however, the circulation is depressed to almost as great an extent as the respiration, and adrenal preparations, which raise the blood-pressure chiefly by causing constriction of the blood-vessels were found to have some value, provided the cardiac inhibition which they produce does not offset the stimulating effect. When they are injected directly into the circulation the slowing of the heart is very pronounced, but it is probable that if their effects were produced slowly (as when absorbed from hypodermic injection) this effect would be less marked. Combined with atropin, which prevents the slowing of the heart and acts to some extent as a stimulant itself, adrenal preparations have greater value in chloroform anesthesia than when used alone.

The value of atropin as a restorative was found to be limited to chloroform anesthesia, and here the beneficial effects are due to the fact that this drug removes cardiac inhibition. The average decrease in pulse-rate in twenty-four experiments where chloroform was administered amounted to 43.7 per cent. The slowing of the pulse in chloroform anesthesia is quite variable; in some of the experiments it was less than 10 per cent., while in others it amounted to as much as 75 per cent. When marked inhibition occurs, atropin causes a sharp rise in pressure by increasing the pulse-rate, and this rise in pressure serves in itself to stimulate the respiratory center. In four experiments in which recovery occurred there was marked inhibition before the injection was made, and in the animal that did not recover, there was only slight change in the pulse-rate. Camphor and digitalis, although good heart stimulants, Plant regards as of not much use during anesthesia, because they act slowly and their stimulating effect is limited to the heart.

87. **Combined Abdominal and Pelvic-Outlet Operations.**—By the use of any metal knee-holder which fits comfortably in the popliteal space, Scott secures an exposure of the abdomen in an elevated position and at the same time exposing the pelvic outlet. This is accomplished by having the popliteal knee-holder hinged on a short, upright bar, broadened and slotted at the lower end to slide, with a set screw, on a horizontal metal bar, which in turn is fixed to a strong cylindrical upright bar, sliding in a screw clasp at the side of the operating table. The sliding on the horizontal bar allows adjustment for the varying lengths of patient's thighs. The cylindrical sliding upright bar at the side of the table permits the thighs to be moderately flexed or fully extended, abducted or adducted at will. A piece of bandage loosely wound about each ankle is tied to any convenient point below the corner of the table, and another is placed above each knee, to prevent extension and elevation of the knees, thus securely holding them in their respective knee-holders. Any modern operating table will serve the purpose of these attachments and enable one to secure the desired combined position if it has a pivotal point about the center permitting the entire surface of the table to be raised or lowered at will.

Kentucky Medical Journal, Bowling Green

November 15

90 Diagnostic Significance of Headache to the Internist. J. W. Kincaid, Catlettsburg.
91 Diagnostic Significance of Headache to the Physician. A. D. Willmoth, Louisville.
92 Diagnostic Significance of Headache to the Specialist in Eye, Ear, Nose and Throat Diseases. M. C. Dunn, Henderson.
93 Present Status of Serotherapy and Vaccine Therapy. F. H. Montgomery, Danville.
94 Necessity for Properly Selected and Compensated City and County Health Officers. J. N. McCormack, Bowling Green.

December 1

95 *Kentucky's Opportunity for Vital Statistics—How the Medical Profession Can Aid. C. L. Wilbur, Washington, D. C.
96 *Nature and Treatment of Splenic Anemia. B. E. Giannini, Coalmont.
97 *Diagnosis and Medical Treatment of Cirrhosis of the Liver. G. W. Payne, Bardwell.
98 *Diagnosis and Treatment of Cholecystitis. I. Abell, Louisville.
99 Abscess of the Liver: Diagnosis and Treatment. J. I. Rathburn, Russell.
100 Etiology, Diagnosis and Treatment of Pellagra. W. F. Stirman, Owensboro.
101 *State Care of the Insane. C. Pope, Louisville.

102 Electricity in Diagnosis and Treatment of Disease. J. J. Rodman, Owensboro.
103 Water Supply and Sewage Disposal. P. Hansen, Bowling Green.
104 *Medical Expert Testimony. E. J. McDermott, Louisville.

95 and 96.—Abstracted in THE JOURNAL, Oct. 15, 1910, pp. 1400 and 1401.

97, 98, 101 and 104. Abstracted in THE JOURNAL, October 22, pp. 1492, 1493 and 1495.

American Journal of Surgery

December

105 Operative Treatment of Cranial Fractures. F. Hartley, New York.
106 Diseases of Bone and Their Differentiation by Means of Roentgen Rays. G. E. Pfahler, Philadelphia.
107 *Contusion of the Back and Its Complications. W. Lathrop, Hazleton, Pa.
108 Local Anesthesia. A. E. Hertzler, Kansas City, Mo.
109 *Acute Angulation and Flexure of the Sigmoid. A Causative Factor in Epilepsy. W. H. Axtell, Bellingham, Wash.
110 A Practical Syringe for Intramuscular Injections. V. C. Pederson, New York.

107. Contusion of the Back.—Summarizing his paper, Lathrop says: In simple contusions of soft parts, we should promote the absorption of extravasated blood by cold, elevation and pressure; but if at all extensive, or with marked fluctuation, immediate incision, under aseptic conditions, will give the best results. Rest is of paramount importance. Massage of contused parts, such as the elbow, shoulder, knee, ankle and hip, is of great value after the acute stage is past. Lead and opium, arnica, alcohol, and sublimate applications are all used more or less, and no doubt with benefit. In severe injury involving not only the skin, but the muscles beneath, and possibly the bony structures as well, the best management is through examination under anesthesia, and treating the case as indicated—careful cleansing, suturing of any torn muscles, and provision for drainage. When sloughing occurs—and it will in many instances—the area should be well protected, and treated as any other granulating surface. In regard to the spine, any injury must be very severe to involve its contents, and must be regarded as serious; it will require time for repair, or improvement, and must be treated largely symptomatically. The prognosis should be guarded at all times.

109. Flexure of Sigmoid.—From an experience in the examination of thirty-one cases of epilepsy, Axtell is convinced that constipation and intestinal toxemia are minor factors in causing epilepsy. Of sixty-seven individuals with obstinate and persistent constipation examined and treated by the sigmoidoscope, forty-three, or 64 per cent., had acute flexure at the recto-sigmoidal juncture. Of these forty-three patients, eight had epilepsy. A remarkable fact was that this condition should be present in every one of the epileptics. Another remarkable feature was that the prolapsed loop of the sigmoid was inordinately impacted in every instance. Of the eight cases six were males, two females; convulsions began eight years before in one; ten years in one; fourteen years in one; four years in one; twelve years in two; time not recorded in two. All the cases had acute angulation of a severe type; all had impaction of the sigmoid of an inordinate character. The cecum in every case was enlarged and tympanitic. In all, the rectal mucous membrane was inflamed and the veins were more or less engorged. One patient had a large ulcer just below the angulation; two had adhesions of the impacted and prolapsed loop of the sigmoid; three had, in addition to the angulations, a thickening of the bowel wall at the point of flexure and an invagination of the mucous membrane to a greater or less degree; two had retroverted uteri, and in one the uterus was adherent from an attack of pelvic peritonitis.

Virginia Medical Semi-Monthly, Richmond

December 9

111 Etiology and Symptoms of Arteriosclerosis. L. T. Royster, Norfolk.
112 Pathology of Arteriosclerosis. H. T. Marshall, Charlottesville.
113 Treatment of Arteriosclerosis. W. S. Gordon, Richmond.
114 Diagnosis and Treatment of Pyelitis. H. A. Fowler, Washington, D. C.
115 Peritonitis and Its Treatment. S. McGuire, Richmond.
116 Climatology of the Seaboard Air Line Region. E. Gladmon, Southern Pines, N. C.

California State Journal of Medicine, San Francisco

December

117 Enucleation of the Tonsil from the Standpoint of the General Medical Man. L. Porter, San Francisco.
118 Enucleation of the Tonsil, a Surgical, Not a Radical Procedure. A. J. Houston, San Francisco.
119 Pathologic Histology of the Tonsil. H. Hastings, Los Angeles.
120 Tendon Transplantation. C. Kurtz, Los Angeles.
121 Strangulated Hernia. A. M. Taylor, San Francisco.

Journal of the Missouri State Medical Association, St. Louis

December

122 *Clinical Recognition of the Scaphoid Type of Scapula and of Some of Its Correlations. W. W. Graves, St. Louis.
123 Rupture of the Intestine from Abdominal Trauma. H. P. Kuhn, Kansas City.
124 *Technic of Immediate Closure of Bladder Following Suprapubic Cystotomy. C. E. Burford, St. Louis.
125 Bladder Calculi. E. G. Mark, Kansas City.
126 What Shall We Do With Patients With Advanced Uterine Cancer? F. Hinchey, St. Louis.
127 Prevention of Blindness. J. Green, St. Louis.

122. Published in THE JOURNAL, July 2, 1910, p. 12.

124. Immediate Closure After Cystotomy.—Instead of immediate, complete closure of the suprapubic wound being a curiosity, Burford holds that it should be the routine procedure in the majority of cases. Constant drainage of the bladder preventing distention and sudden tenesmus, is a necessity if integrity of a freshly sutured vesical wall is to be maintained. Instead of the perineal or suprapubic drain, the method under discussion involves the use of the natural channel of the urethra for a large caliber drainage tube. The character of cases in which this is indicated is as follows: (1) Following removal of all benign and many malignant growths of the bladder when hemorrhage is not great; (2) following all cases of suprapubic cystotomy for retrograde catheterization of impassable stricture of urethra; (3) following many cases of suprapubic lithotomy; (4) following many cases of suprapubic prostatectomy in which the cystitis is not too severe.

Ohio State Medical Journal Columbus

December

128 Etiology, Results and Treatment of Movable Kidney. R. E. Skeel, Cleveland.
129 The Movable Kidney from a Medical Standpoint. M. J. Lichty, Cleveland.
130 The Movable Kidney from the Standpoint of the Genito-Urinary Surgeon. E. O. Smith, Cincinnati.
131 Hyoscin Hydrobromid as an Adjunct to Cocain Anesthesia, and as a Preventive to Cocain Poisoning. M. Metzenbaum, Cleveland.
132 Social and Economic Value of Efficiency in Medicine. F. P. Lewis, Buffalo, N. Y.
133 Medical Inspection of Schools. J. H. McHenry, Cleveland.
134 Malingering and Its Detection. E. E. Gaver, Columbus.
135 Tetany of Children. D. S. Hanson, Cleveland.

Bulletin of the Johns Hopkins Hospital, Baltimore

December

136 *Electrocardiography and Phonocardiography. L. F. Barker, Baltimore.

136. Electrocardiography and Phonocardiography.—This is a collective review of the work done and of the instruments used in the study of the differences in electric potential which occur in different parts of the heart-muscle preceding and during their activity.

Journal of the Tennessee State Medical Association, Nashville

December

137 Treatment of Syphilis by Salvarsan. W. Litterer, Nashville.
138 Report of 503 Cases Treated with Salvarsan. W. Wechselmann, Berlin, Germany.
139 Report of 109 Cases of Syphilis Treated with Salvarsan. A. Glueck, Sarajevo, Bosnia.
140 Subphrenic Abscess. A. B. Cooke, Nashville.
141 Pathologic Report. W. Litterer, Nashville.
142 A Case of Subphrenic Abscess. J. J. Waller, Oliver Springs.
143 Plea for a Higher Standard of Medical Education. A. McCoy, Jackson.

Journal of the Kansas Medical Society, Kansas City

December

144 *Necrobacillosis of the Skin. C. M. Stemen, Kansas City.
145 Bacteriology of *Bacillus Necrophorus*. F. W. Shaw, Kansas City.
146 Appendicitis. C. R. Lytle, Durham.
147 Etiology and Treatment of Ulcerations of the Cornea. W. H. Graves, Pittsburg.
148 Cleft Palate. G. W. Jones, Lawrence.
149 The New Profession. H. B. Caffey, Pittsburg.

144. **Necrobacillosis of the Skin.**—The case cited by Stemen was caused by the *Bacillus necrophorus*, the condition being identical with one found on the lip and legs of the sheep. The ulceration in this case was on the back of the hand and was about 2½ inches broad by 2 inches in length, and raised at its highest about ¾ of an inch. The sore consisted of blebs, each one, seemingly, having its own peculiar appearance, some gray and some a bluish red. The inflammation extended to the shoulder. The entire arm was rubbed thoroughly twice daily with unguentum Credé. The ulceration proper was treated with the bichlorid pack and a 20 per cent. solution of ichthyol applied to the parts adjacent to the ulceration. The constitutional treatment consisted of 20 grains of iodid of potassium 3 times daily, with 1 teaspoonful of salts morning and night. The man made an uninterrupted recovery and in three weeks the wound had entirely healed.

Colorado Medicine, Denver

December

150 A Fatal Case of Lupus Erythematosus. C. B. Van Zant, Denver.
151 The Dwarf Tapeworm in American Children. J. W. Amesse, Denver.
152 Transmission of Contagious Diseases. M. Kleiner, Denver.
153 A Dietary Study in the National Swedish Sanatorium, Englewood, Colo. C. D. Spivak, Denver.
154 Retropharyngeal Abscess. W. C. Bane, Denver.

Iowa Medical Journal, Des Moines

December

155 *Diagnosis of Pancreatic Diseases. D. C. Brockman, Ottumwa.
156 Postoperative Treatment of Laparotomy. J. L. Augustine, Ladora.
157 Treatment of Diffuse Septic Peritonitis. V. Knott, Sioux City.
158 Milk Examination. S. R. Klein, New York.
159 Surgical Procedure in Contracted Pelvis. H. G. Welpton, Des Moines.
160 A National Department of Public Health Necessary for Prevention and Control of Tuberculosis and Other Communicable Diseases. G. A. Smith, Clinton.

155. **Diagnosis of Pancreatic Diseases.**—Brockman urges an examination of the pancreas in every examination for pathology in the upper abdomen, in cases in which the biliary apparatus is diseased, in cases of rapid emaciation without evident cause, in every case of diabetes in the adult, in all cases of profound abdominal disease accompanied by ileus, collapse, vomiting and pain in upper abdomen, in all cases of painless jaundice with enlarged gall-bladder and loss of weight which will prove to be either chronic sclerosing of the head of the pancreas, due to chronic inflammation, or cancer of the head of the organ.

Journal of the Medical Society of New Jersey, Orange

December

161 *Relation and Attitude of the Pubic To and the Obligation of the Physician in the Development of Communicable Diseases. P. Marvel, Atlantic City.
162 Adenoids and Their Influence on the Mental Condition of the Patient. J. Koppel, Jersey City.
163 *Sulph-hemoglobinemia. T. W. Clarke, New York, and R. M. Curtis, Paterson, N. J.
164 Our Present Knowledge of Anterior Poliomyelitis. P. Boysen, Riverton.

161. Abstracted in THE JOURNAL, Aug. 6, 1910, p. 527.

163. Also published in the *Medical Record*, Dec. 3, 1910; abstracted in THE JOURNAL, Dec. 17, 1910, p. 2181.

Journal of the Minnesota State Medical Association and the Northwestern Lancet, Minneapolis

December 15

165 Cystitis and Pylecystitis in Infants and Young Children. W. R. Ramsey, St. Paul.
166 Teaching of Hygiene in the Grades. F. E. Lurton, Anoka.
167 Malignant Endocarditis with Recovery. H. L. Staples, Minneapolis.

West Virginia Medical Journal, Wheeling

December

168 Victories to Be Achieved and Problems to Be Solved by Medicine. W. H. Sharp, Parkersburg.
169 The West Virginia Physician and Tuberculosis. C. A. McQueen, Charleston.
170 Management of Normal Labor. H. W. Daniels, Elkins.
171 Preservation and Repair of the Perineum. W. A. McMillan, Charleston.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

November 26

1 *Use of Elastic Traction and Elastic Pressure in Surgery. G. A. Wright.
2 High Blood-Pressure in Arteriosclerosis. R. D. Rudolf.
3 *Reaction of the Heart to Digitalis When the Auricle is Fibrillating. T. Lewis.
4 *Variations of the Fermentation Properties of *B. Typhosus*. W. J. Penfold.
5 Diaphragmatic Hernia in an Adult. E. Ringrose.
6 Diagnosis and Treatment of Infective Labyrinthitis. R. Bárány, S. Scott and C. E. West.
7 Connection Between Irritation of the Mucous Membranes Throughout the Body and Middle-Ear Catarrh. M. Hovell.
8 *Practicability of Treating Meningitis by Lavage of the Cerebrospinal Subarachnoid Spaces. J. S. Barr.
9 Ossiculectomy in Chronic Suppurative Otitis Media. M. Yearsley.
10 Deafness and Disease of the Ear in Relation to the Public Services and Insurance. J. Horne.
11 Aural Tuberculosis in Children. W. Milligan.
12 Congenital Atresia of the Choanæ. J. S. Fraser.
13 Headaches in Association with Obstruction in the Nasal Passages. L. H. Pegler.
14 Tuberculin in Laryngeal Tuberculosis. W. C. Wilkinson.
15 Vasomotor Rhinitis. H. S. Birkett, E. B. Waggett and A. Francis.
16 Cancer of the Throat. R. H. S. Spicer.

December 3

17 Prophylaxis in Obstetrics. A. W. Russell.
18 Treatment of Hypertension Based on Consideration of the Cause. H. B. Shaw.
19 *Estimation of Blood-Pressure by the Sphygmo-Oscillometer. K. Eckenstein.
20 Control of Venereal Diseases at Their Source in Civil Communities. H. C. French.
21 Combined Use of Spinal and General Anesthesia. A. E. Johnson.
22 Thyroid Extract in Rheumatoid Arthritis. H. Wilson.
23 A Case of Intestinal Reflex. E. S. Stevenson.
24 Proof of the Endemic Origin of Yellow Fever in West Africa. R. W. Boyce.
25 Fatal Trichocephaliasis in a Child. J. G. S. Jamieson and J. M. Lauder.

1. **Elastic Traction.**—The use of rubber as an orthopedic agent is discussed by Wright. In cases of flexion of joints, when no actual ankylosis is present, but immediate straightening by force is undesirable, he thinks no more valuable means of rectification exists than elastic tension. First, rubber has the advantage over steel springs in that its tension can be employed through a much wider range, and the strength of the tension is capable of more ready adjustment. It is much easier to apply slighter degrees of traction or pressure, much easier to arrange for the exact line of traction required, and, in addition, any apparatus needed may be readily and cheaply improvised. The appliances are exceedingly cheap, easily managed, and easily replaced. A little ingenuity and some rubber cord is the stock-in-trade, though patience and care are, of course, also necessary, as living tissue cannot be dealt with quite as if it were a question of cabinetmaking or upholstering. Pressure sores are a possible result of mismanagement or neglect, and are easier to make than repair.

For flexed joints that require straightening, all that is necessary in many cases is the application of a straight splint across the angle of flexion, secured to the limb above and below the joint, but not so tightly as to prevent the lower segment from slipping through the bandages as the limb straightens. These bandages may be of any material, but it is better to use flannel or some slightly elastic material for the distal segment of the limb. The joint is left bare at this stage. Next an elastic bandage is carried over the joint and round the splint so as to exert the desired pressure in the required direction. The angle of flexion should be measured before and at short intervals during the treatment. A daily removal of the elastic is necessary at first to make sure that there is no excessive pressure. Exactly similar appliances may be used to prevent or to correct cicatricial contractions in suitable cases. It is a good plan to substitute elastic traction applied to the lower segment of the limb, either as a temporary substitute or an alternative to the elastic pressure, if, for any reason, direct pressure over the joint is inadvisable. A good example of the use of elastic traction is seen in Bryant's double splint. In fracture of the patella, elastic traction may be used to approximate the fragments by steadying the lower one and drawing the upper downward toward

it. In rachitic deformities the use of elastic pressure finds a very wide application. For curvatures of the shafts of the bones of the leg a straight splint applied on the concave side with elastic pressure over the convexity of the curve will straighten a large proportion of these curved limbs. Of course, the more rapidly the deformity is increasing the more likely is the use of elastic pressure to succeed.

For the anterior curve of the tibia the tension of the calf muscles makes the use of elastic pressure more tedious, and in some instances nothing but cuneiform osteotomy or a splice section will succeed. For genu valgum in slight cases an outside splint applied on similar lines is efficient, but in severe cases there is great difficulty in maintaining steady pressure by reason of the tendency of the limb to rotate outward, and so take off the tension. In the great group of deformities classed as flat-foot and talipes, there is ample scope for the use of elastic traction. For paralytic conditions the elastic traction is a most useful adjunct to, or, in some circumstances, substitute for tendon grafting.

3. **Reaction of the Heart to Digitalis.**—Lewis suggests that the ventricular rate is retarded in clinical auricular fibrillation by the action of digitalis on the junctional tissues, the functions of which are already in a depressed state.

4. **Fermentation Properties of Bacteria.**—Penfold pleads for the value of the fermentation tests in elucidating the laws of bacterial variation. They are easily applied, and if once understood, he thinks, would probably explain many of the most difficult problems in connection with virulence and other properties of microorganisms.

8. **Treatment of Meningitis.**—The experiments carried out by Barr were made on the body of a child, which had died of epidemic cerebrospinal meningitis. Lumbar puncture was performed, and the hollow needle left *in situ*. A small quantity of turbid fluid escaped but soon ceased to flow. Through a trephine opening in the skull, made above and behind the left ear, a cannular trocar was introduced into the lateral ventricle, and, on removing the trocar, a small quantity of turbid fluid escaped through the cannula. By means of a rubber tube attachment and a glass funnel, held 2 in. above the head, water tinted with carbol fuchsin was allowed to flow into the ventricle. Almost immediately turbid fluid began again to drop from the needle in the lumbar region, and in less than a minute the escaping fluid was found to have a reddish tinge; it continued to flow as long as the fluid entered the lateral ventricle. The higher the elevation of the glass filler the faster became the flow of stained fluid from the needle, and the flow was allowed to continue for over a quarter of an hour. The brain was then removed and carefully examined, when the course of the fluid introduced into the ventricle could easily be traced by the red coloration into the fourth ventricle via the foramen of Monro, third ventricle and aqueduct of Sylvius. From the fourth ventricle the fluid found exit into the subarachnoid space (cerebello-medullary cistern) through the foramen of Magendie, and possibly also through the two lateral apertures. It stained the entire cerebello-medullary cistern, passed forward into the interpeduncular cistern, upward along the Sylvian fissures over the anterior ends of the temporosphenoidal lobes, and even along the vaginal sheaths of the optic nerves. The course of the colored fluid could also be traced downward along the spinal subarachnoid space.

The same experiment was repeated on several other fresh subjects with similar results. This at least established the fact that fluid may pass uninterruptedly from the ventricular system into the basal and spinal subarachnoid spaces. A case (a boy 13 years of age) of advanced purulent leptomeningitis, secondary to a chronic purulent ear affection, came under Barr's care. The symptoms were typical of the worst form of the disease, and lumbar puncture verified the diagnosis, the fluid withdrawn being turbid, containing streptococci in chains, as well as pus cells. The radical mastoid operation, including the opening of the dura mater and the employment of such therapeutic measures as hexamethylenamin, 10 grains 4 times daily, repeated lumbar puncture, and several subcutaneous injections of antistreptococcus serum, led to no improvement in the condition, and, two and a half days after the admission to the hospital, the patient was obviously moribund. He was in a state of coma, the temperature was over 103 F., pulse 130 a minute and feeble, and the breathing markedly Cheyne-Stokes in type. It was considered justifiable to operate in the same way as Barr had done in the cadaver. By means of a glass funnel attachment, sterilized saline solution, at a temperature of 100 F., was allowed to flow into the lateral ventricle. In a few seconds turbid fluid began to drop from the lumbar cannula. This was carried on for quite an hour, and at the end of that time more than half a pint of turbid flaky fluid had been collected in a glass. As a final step, 10 c.cm. of antistreptococcus serum were introduced into the lateral ventricle through the rubber tube. The cannula in the lumbar region was then removed, but the rubber tube, fixed by means of sutures, was left in the lateral ventricle. The patient bore this prolonged operation well, and for an hour or two there was a slight general improvement, but no return to consciousness; this slight improvement soon passed off, and death ensued fourteen hours after the completion of the operation. A postmortem examination confirmed the diagnosis of widely diffused basal leptomeningitis, characterized by the large amount of exudate filling the basal subarachnoid cisterns. There was no other intracranial lesion.

19. **Estimation of Blood-Pressure.**—The sphygmo-oscillometer, described by Eckenstein, is the instrument which was devised by Dr. V. Pachon, Chef du Laboratoire de Physiologie in the Faculty of Medicine of Paris, for the clinical estimation of blood-pressure, and the study of the variations which occur in the cardiac cycle as manifested by the pulse-wave. It consists of a rigid and air-tight metallic box, which contains an aneroid chamber. At the beginning of an experiment the box, the aneroid chamber and the armlet are in direct communication with one another. One great advantage of this instrument is said to be the absence of the personal equation. Those who have worked with instruments of the Riva-Rocci type must have been struck with the difficulty that is sometimes experienced in determining the exact moment at which the registering finger can no longer distinguish the pulse. This difficulty may be made still more marked if two observers perform the experiment, one of whom is engaged in watching the sphygmomanometer, while the other is occupied solely with feeling the pulse. With the oscillometer there is no such difficulty, as the disappearance or the reappearance of the pulse is indicated by the needle. The oscillometer should be used exactly as a Riva-Rocci instrument—that is to say, the armlet should be applied over the brachial artery and the finger on the radial pulse.

Lancet, London

November 26

26 *Thrombotic Softening of the Spinal Cord a Case of So-Called Acute Myelitis. H. C. Bastian.
27 Diseases of Elephants' Tusks in Relation to Billiard Balls. J. Bland-Sutton.
28 Diffuse Lipoma. J. Hutchinson.
29 Infection in Phthisis. L. Cobbett.
30 Salvarsan ("606"). E. Emery.

December 3

31 Treatment and Prognosis of Exophthalmic Goiter. W. H. White.
32 Recurring Arterial Hypertonus in Granular Kidney and in Migraine. W. Russell.
33 Diagnosis and Treatment of Cystic Disease of the Breast. D. Power.
34 *Heart Strain and Dilatation. J. F. Goodhart.
35 Motor Functions of the Stomach. H. M. W. Gray.
36 Intramedullary Lesion of the Spinal Cord. A. Bernstein.
37 *Intestinal Obstruction Caused by an Enterolith Spontaneously Cured by Evacuation Through an Umbilical Fistula. D. M. Greig.
38 Outbreak of Illness Due to Canned Meat in the City of Carlisle. J. Beard.

26. **Thrombotic Softening of the Spinal Cord.**—Bastian holds that the evidence seems to be altogether overwhelming that in the great majority of cases of so-called "acute myelitis." and also of "acute poliomyelitis," the affection is caused not by an inflammation, but by the thrombosis of some of the vessels of the spinal cord (when, in the latter disease, it is not due to a special acute degenerative process). This latter conclusion, he believes, is rendered obvious: (1) by the similarity of the morbid changes in question to those occurring in the brain which are due to thrombosis, as well as to the absence of any reason why a primary inflammation should

be rare in the brain and common in the spinal cord; (2) these strictly logical reasons are strongly reinforced by the fact of the existence of special conditions favoring the occurrence of thrombosis in the vessels of the spinal cord, and in just such parts of the cord as are most frequently affected; (3) by the fact that the disease is most commonly met in just such persons and under just such conditions (as to heart's action, blood-vessels and quality of blood) as are known to be favorable to the occurrence of thrombosis; (4) by the fact that the mode of onset and the early symptomatology of the affection are wholly different from what they would be, had an inflammation of the cord actually existed; and (5) by the fact of the absence of any reasonable cause of inflammation, certainly in the majority of those in whom the malady makes its appearance.

34. **Heart Strain and Dilatation.**—True heart strain, by which Goodhart understands a state of muscle that, if not dealt with by retreat from all active exercise for long periods, leads to dilatation of the heart, is a rare condition. Dilatation of the heart, in the beginning, is evidently not easy to determine with certainty, for it may share signs and symptoms in common with many emotional and other nerve disturbances of which the heart is a past-master of expression. Cases of doubt are common, and they call for circumspection as regards their management.

37. **Intestinal Obstruction.**—A boy, of imperfect health, a sufferer from alternating constipation and diarrhea, had a pointing abscess at the umbilicus which was protruding, inflamed and fluctuating. The abscess burst and discharged offensive pus, which necessitated frequent dressing, but the boy did not seem to make progress. After five days of vomiting and pain, a drainage tube was inserted. This was followed by a diminution of the discharge, but it was noticed that there was some fecal matter mixed with the pus. The slight improvement was maintained for a few days. The sinus was enlarged by dressing forceps, and an attempt was made to provide more efficient drainage. This was successful to some extent. While the wound was being dressed, a rounded calculus-like mass presented in the sinus and was easily removed, its escape being accompanied and followed by an unusually large quantity of pus. From that moment the wound healed rapidly and the boy's condition materially improved, and he was discharged healed and looking well and stout ten days later. His general improvement was as striking and remarkable as the improvement in the local condition. The structure which was discharged proved on examination to be an enterolith. It was globular, measured 2½ inches in circumference, was rather larger than an ordinary marble, being smooth for the most part but not polished, and when dried its most striking feature was its lightness. It weighed 24 grains, and, indeed was considerably lighter than a pith ball of equal size. Where the enterolith lay in this case it was impossible to say. The sinus led from the umbilicus backward into the right loin, but the obstruction must have been in the small intestine, for a foreign body of its size could not cause obstruction in the large bowel.

Medical Press and Circular, London

November 9

39 Medical Treatment of Ulcer of the Stomach and Duodenum. F. J. Smith.
40 Local Tenderness on Pressure in Tuberculosis. C. Sabourin.
41 Occurrence of Headache and Pain in Nasal Conditions. J. W Wood.

November 16

42 Vision. W. R. MacDermott.
43 Pathogenesis and Treatment of Anuria. C. Achard.
44 Infection of the Urinary Tract with *B. Coli*. J. R. Charles.

Clinical Journal, London

November 9

45 Arthritis: Its Varieties and Treatment. W. Murrell.
46 Enlarged Tonsils and Adenoids. G. F. Still.
47 Endo-Aneurysmorrhaphy. W. Sheen.

November 16

48 Syphilitic Headaches. G. Pernet.
49 Treatment of Central Osteitis by Metal Drains. C. J. Symonds.

Indian Medical Gazette, Calcutta

November

50 A New Method of Making Permanent Preparations of Mosquitoes. C. A. Bentley and J. Taylor.
51 Value of Adrenalin and Pituitrin in Treatment of Cholera. H. E. Drake-Brockman.
52 Persistent Hiccough as a Sequela of Choleraic Diarrhea. W. D. Keyworth.
53 Diagnosis and Treatment of Intrapelvic Extra-Uterine Tumors. K. Platt.
54 Strangulated Hernia. F. P. Connor.
55 Three Unusual Cases of Hemoglobinuric Fever. C. Roper.
56 •An Unusual Complication of Labor. D. Munro.
57 Two Cases of Snake Poisoning. Recovery. F. C. Fraser.
58 Fatal Case of Snake-Bite by *Echis Carinata*. C. H. Reinhold.
59 A Case of Poisoning by Eucalyptus Oil. G. G. Jolly.

56. **An Unusual Complication of Labor.**—In the case reported by Munro, a cystic tumor about twice the size of a fetal head was attached between the legs of the fetus. The base of attachment corresponded to what should have been the perineum and to the coccyx and sacrum. The tumor was covered by ordinary skin continuous with that over the abdomen and buttocks of the fetus. No anal opening could be discovered in the fetus. Its pelvic cavity communicated directly with the cavity of the tumor. In front of the base of attachment of the tumor was a rudimentary vulva with a small blind urethra. There were several daughter-cysts in the walls internally and running around the internal walls were loops of the intestine. Of these loops some were rudimentary and blind. They were attached to the inner wall of the cyst by mesentery. The rectum of the fetus was in this way continuous with a blind loop in the wall. The spinal column of the fetus did not end at the coccyx but was continued on into a bony mass which seemed like a rudimentary pelvis. From this mass five stunted twisted legs had projected forming a star-shaped figure. Of these one foot had eight toes, one six toes, one three toes and one one toe. They were not all of the same size and were at different stages of development and perfection. Two of them were very rudimentary, containing some rudimentary bone, but joined on to the central mass by skin and fibrous tissue. Another was only joined on by skin and fibrous tissue. Two of the legs had articulations with the rudimentary pelvis, and did not hang loose like the others. Munro dissected out from one a fairly well-formed tibia with ossified shaft and upper and lower cartilaginous epiphyses.

Archives Générales de Chirurgie, Paris

September, VI, No. 9, pp. 881-990

60 Plastic Operation After Severe Burns of the Face. (Cicatrices vicieuses de la face.) L. Desgouttes and L. T. Tavernier.
61 Hemophilic Iliac Hematoma. G. Houzel.
62 •Traumatic Asphyxia. (Le masque ecchymotique de la face par compression thoracique.) P. Mauclaire and R. Burnier.

October, No. 10, pp. 991-1100

63 •Operability of Cancer of the Rectum. A. Chalier.
64 •Automobile Fracture of the Radius. (Fractures radio-epiphysaires.) P. Caccia.
65 •Continent Gastrostomy. (Gastrostomie par dédoublement du muscle droit suivant son épaisseur.) F. Lofaro.

62. **Traumatic Asphyxia.**—Mauclaire and Burnier report two cases of stasis cyanosis from trauma compressing the upper part of the trunk, and summarize sixty-six other cases from the literature. Treatment should be that for asphyxia in general, supplemented by stimulants, heat and friction.

63. **Operability of Cancer of the Rectum.**—Chalier found nearly 60 per cent. operable in his own experience with forty-seven cases, but the percentage in sixteen other clinics, which he cites, ranged from 19 to nearly 81 per cent. He found the ampulla distended with gas without admixture of feces in two cases; this is what is known as Hochenegg's sign of rectal cancer. The patient should be examined both erect and reclining, and anesthesia is frequently necessary to determine the question of operability. Even with this, he adds, metastasis in the liver is liable to escape detection. Exploratory laparotomy in the left side is the best of all means, he says, to determine the actual condition with rectal cancer in men, and vaginal laparotomy in women. He regards involvement of the bladder or urethra as contra-indicating removal; adhesion to the uterus or adnexa is not a contra-indication. In three of his cases a mammary or gastric cancer had been previously removed, and in another case a cancer in the anus or one in the sigmoid flexure was removed at the same time, and the patients survived from seven months to two years.

64. **Automobile Fracture of the Radius.**—Caccia reports five cases from Rome and describes the mechanism of the fracture and treatment, advising immobilization in abduction and slight supination when the fracture was the result of pres-

sure and flexion. But if it is due to torsion, immobilization in slight adduction is indicated, the hand slightly flexed and adducted, the arm between supination and pronation. During the immobilization the fingers should be exercised to maintain muscle functioning and after a week the cast should be removed for massage every day, and be discarded by the end of three weeks.

65. **Continent Gastrostomy.**—Lofaro separates the layers of the rectus muscle or bores through it horizontally and draws a cone of the wall tissue of the stomach through the passage thus made in the thickness of the muscle, bringing the cone of stomach wall finally out through the skin where it is sutured to make an opening into the stomach. The muscle fibers around, above and behind it insure a sphincter-like closure of the opening. The outcome was excellent in the eight dogs on which the operation has been performed.

Lyon Médical, Lyons

November 20, CXV, No. 47, 845-884

66 No Appreciable Influence from Simple Hyperthermia and Febrile Infection on Glycemia. R. Lépine and Baulud.
67 Functions of the Thymus. E. Weill.

Bulletin de l'Académie de Médecine, Paris

November 15, LXXIV, No. 36, pp. 261-338

68 *Comparative Value of Organic Arsenic and Mercury in Syphilis. E. Gaucher.
69 *Malta Fever. F. Widal.

68. Summarized in Paris Letter, Dec. 10, 1910, page 2074.

69. **Contagiousness of Malta Fever.**—On Widal's motion the Académie adopted a resolution advocating compulsory notification of cases of Malta fever, after he had discussed several small epidemics of the disease that have occurred in France recently. In most cases infection could be traced to goat's milk, but not always. Even mere contact with the infected goats or with their blood may transmit the disease. Laboratory infection seems to occur more readily with Malta fever than with glanders or plague, and he reported a case in a worker in his own laboratory, who developed a typical case of Malta fever after working on some cultures of the Malta micrococcus. No other source for his infection could be discovered; his habit of laying temporarily his cigarette on his work table probably afforded the opportunity for contagion.

Presse Médicale, Paris

November 16, XVIII, No. 92, pp. 857-864

70 Intoxications. H. Roger.

November 19, No. 93, pp. 865-880

71 *Experiences with Lime in Treatment of Pulmonary Tuberculosis. (Recalcification—méthode de Ferrier—dans la tuberculose pulmonaire.) E. Sergent.
72 Wisdom-Tooth Disturbances. (Péricoronarite dentaire.) P. Fargin-Fayolle.

November 23, No. 94, pp. 881-888

73 Operative Treatment of Hemorrhoids. P. Reclus.

November 26, No. 95, pp. 889-896

74 *Serous Meningitis and Anaphylaxis After Spinal Serotherapy. J. A. Sicard.

71. **Lime in Treatment of Tuberculosis.**—Sergent has been treating pulmonary tuberculosis in the last six years according to Ferrier's recalcification method. This aims to resupply the lime, the loss of which, he believes, prepares the soil for tuberculosis and promotes its development. Sergent here gives the theoretical bases and reviews the results of treatment along this line, regarding it as the best method of treating tuberculosis at our disposal. The aim is to prevent undue loss of lime and to induce recalcification in the decalcified organism. He has applied it in 1,574 cases and states that 306 patients have been under practically constant observation for from six months to five years. General improvement was marked in 96 per cent.; general and local in 40 per cent.; 14 per cent. were apparently cured, while in 14 per cent. the disease continued its course unmodified. Ferrier assumes that the principal cause of the loss of lime is acid fermentation in the digestive tract, which must be prevented, and combated while the lime salts are to be given in substance and in mineral waters.

74. **Serous Meningitis After Intraspinal Serotherapy.**—Sicard calls attention to the meningitis liable to follow intraspinal injection of any substance, but especially of antimeningococcus serum. He applied this serotherapy in certain nervous and mental diseases, epilepsy or psychoses, hoping to modify the permeability of the meninges, and was surprised at the lively reaction that followed even small injections, the temperature rising several degrees, with headache, nausea, a suggestion of Kernig's sign and pains in the legs, all appearing two or three hours after the injection, most intense by the fifth or sixth hour and then gradually subsiding. The spinal fluid was turbid or opalescent, with polynucleosis gradually yielding to lymphocytosis. This reaction to the serum was observed both with normal and with chronically diseased meninges. With acute meningitis the infectious symptoms masked those due to the serum reaction, which explains why the latter has not been recognized before. This reaction has nothing to do with anaphylaxis as it occurs with the first injection. In one case this reaction following the serum injection in meningitis in a young man was assumed to be a flaring up of the infectious process, but the sterility of the cerebrospinal fluid convinced Sicard that it was merely this serum reaction, and the rapid recovery confirmed his assumption. In another case the laboratory findings in the cerebrospinal fluid were negative in a case suspicious of meningitis. The fluid the next day was opalescent and the diagnosis was supposed to have been erroneous until it was learned that in the interim an intraspinal injection of serum had been made. The change in the fluid was merely a serous reaction and the rapid recovery showed that a tonsillitis was responsible for the disturbances.

Revue de Gynécologie, Paris

October, XV, No. 4, pp. 305-400

75 Large Subperitoneal Myxoma of Broad Ligament. H. Brin.
76 *Vagino-Sacral Hysterectomy. (Hystérectomie vaginale à ciel ouvert.) Chaput.
77 *Inflammation of Gastric Cellular Tissue. (Linite plastique.) P. Reymer and P. Masson.
78 Contusions and Traumatic Ruptures of the Duodenum. II. M. Guibé.

November, No. 5, pp. 401-512

79 Double Uterus. Anatomy and Development. G. Piquand.
80 Advantages of Billroth I. Technic for Anastomosis After Pylorectomy. (La suture duodéno-gastrique terminale après pylorectomie.) M. L. Chevrier.

76. **Vagino-Sacral Hysterectomy.**—Chaput asserts that the technic illustrated has the advantages of both the abdominal and vaginal routes; it gives ample access, exposing the parts fully to view, while it is an unusually benign operation and leaves no scar on the abdomen. It is particularly useful for rather inaccessible vesico-vaginal fistulas as well as for operations on the internal genitals. The incision starts from near the right posterior superior spine of the ilium, follows the right margin of the sacrum, passes half way between the anus and the ischium and ends in the center of the right labium. The parts are incised down to the vagina and peritoneum inclusive. The vagina is thus opened through the labium up into the posterior cul-de-sac, a little to the right of the median line. His illustrations show the ample access thus provided and also the practically invisible scar left between the buttocks.

77. **Plastic Linitis.**—There were signs of cancer in the two cases reported by Reymer and Masson, and they say that study of the gastric chemistry in cases of so-called plastic linitis would probably reveal unsuspected malignant disease in many if not in all cases.

Semaine Médicale, Paris

November 30, XXX, No. 48, pp. 565-576

81 *Idiopathic Congenital Dilatation of the Rectum. (Megarectum.) L. Bard.

81. **Idiopathic Dilatation of the Rectum.**—In Bard's case the patient was a farmer of 48, whose rectum was dilated to fill two-thirds of the abdomen, pushing up the diaphragm to the third interspace on the right and to the sixth on the left. The rectum was packed with feces, over 5 pounds being removed, besides a mass nearly 3½ inches in diameter packed in the small pelvis. The man died under choleriform symptoms after a dose of castor-oil. The remarkable feature of the case was that the man had never known anything was

wrong in the abdomen; there had never been any symptoms of obstruction or digestive disturbances. The rectum was the only part of the intestine involved. Cough, dyspnea and a tendency to ascites were the only symptoms complained of and the interference with the movements of the diaphragm was probably responsible for them. He was a large eater with stool only about every second day. Bard explains the dilatation in this case as due to a congenital lack of strength and resistance in the walls of the rectum.

Archiv für Gynaekologie, Berlin

XCI, No. 3, pp. 479-761. Last indexed December 17, p. 2187

82 Relations Between Conception and Menstruation and Embedding of the Ovum. S. Gottschalk.
83 Atresia of Follicles in Child Ovaries. W. Benthin.
84 Histogenesis of Corpus Luteum and Products of Retrogression. K. Hegar.
85 *The Wertheim-Schauta Operation for Genital Prolapse. W. Stoeckel.
86 Lecithin Bouillon for Differentiation of Hemolytic Streptococci. A. Hamm and P. Jacquin.
87 Epithelium Development in Vaginal Portion of Uterus. R. Meyer.
88 Erosions and Pseudo-Erosions of Vaginal Portion of Uterus, Congenital and in Adults. R. Meyer.
89 Abdominal Operations for Uterine Carcinoma. K. Franz and A. Zinsser.
90 Lymphangiectasia with Uterine Myoma. R. Todyo.
91 Simulated Superfetation. E. E. Franco.
92 *New Experimental Research on Function of Corpus Luteum. L. Fraenkel.

85. **The Wertheim-Schauta Prolapse Operation.**—Stoeckel has performed this operation in forty cases and discusses several points which he regards as important for the technic. The bladder should be entirely mobilized and the uterus interposed so that it holds the entire bladder evenly on its back. If the uterus shows too strong a tendency to straighten up again there is less chance for its serving the purpose. Unless the uterus can be brought down without force as far as the urethra, he does not attempt to apply this technic. In one case it was a mere accident that he discovered an incipient carcinoma in the corpus as he was about to perform this operation. The patient had no signs of malignant disease and he wavered between the Schauta technic and hysterectomy, finally deciding on the latter. To his amazement he found a flat carcinomatous ulcer in the fundus; since then he has never utilized the uterus in a prolapse operation unless absolutely convinced of the soundness of its interior. For this purpose he curettes a day or so before the contemplated Schauta operation examining the scrapings under the microscope, and before suturing the uterus to support the bladder, he slits the anterior wall and inspects the interior, then curettes, applies the actual cautery to destroy the mucosa throughout, so as to ward off any possible trouble later by obliterating the cavity of the uterus, especially the opening into the tubes. One of his patients succumbed to pulmonary embolism, ten days after the operation, as she was allowed to get up. There was moderate myocarditis in this case; the operation had required only thirty-five minutes, under chloroform, and convalescence had been afebrile. A tendency to slight incontinence in two cases was evidently due to fastening the uterus too high.

92. **Function of the Corpus Luteum.**—Further experiences during the last seven years with 277 new experiments have only confirmed Fraenkel's statements in 1903 based on 120 experiments. All apparently sustain the assumption that the corpus luteum is a gland with an internal secretion, and that this is responsible for the changes and processes which induce the settling down of the ovum in the uterus and control the first few weeks of embryonal life. In the 112 rabbits whose corpus luteum was entirely removed before the fifteenth day after coitus, the pregnancy was completely arrested, while it progressed unmodified in over 50 per cent. of the fifty-three cases in which only part had been removed.

Beiträge zur klinischen Chirurgie, Tübingen

LXX, No. 1, pp. 1-391. O. von Angerer Festschrift

93 Parabiosis by Direct Union of Vessels. E. Enderlen, G. Hotz and H. Flörcken.
94 *Persisting Thymus with Exophthalmic Goiter. H. Gebele.
95 Free Osteoplastics. W. Lobenhoffer.
96 *Expulsion of Foreign Bodies. (Fremdkörper im Organismus.) H. v. Baeyer.
97 Surgical Impressions in America. F. Ebermayer.
98 General Treatment Before and After Operations. E. Leonpacher.
99 Intoxication from Dermatol. L. Dorn.
100 Roentgen-Ray Inspection in Sun-Lighted Room. (Röntgenoskopische Operationen im tagheilen Raum.) R. Grashey.
101 Traumatic Retroflexed Coxa Vara. R. Grashey.
102 Injuries of the First Metacarpophalangeal Joint. R. Grashey.
103 Transverse Fracture of the Upper Jaw. (Zur Quérin'schen Transversalfraktur des Oberkiefers.) J. Duschl.
104 Ultimate Outcome of Traumatic Dislocation of the Shoulder. K. Lexer.
105 Brachydactylia. F. Klaussner.
106 Treatment of Injuries of the Lungs. v. Bomhard.
107 Primary Operative Treatment of Gunshot Wounds of the Lungs. R. Seggel.
108 *Operative Treatment of Gastric Ulcer. (Zur chirurgischen Behandlung des Magengeschwüres.) A. Schmitt.
109 Splenectomy After Rupture of Spleen and in Malarial Fever. Papaioannou.
110 Hysteric Ileus. R. Dax.
111 Treatment of Diffuse Suppurative Peritonitis. Lunckenbein.
112 Emptying the Stomach in Operating on This Organ. (Mechanismus der Magenentleerung bei Magenoperierten.) C. Maunz.
113 Intrahernial Torsion of the Omentum. (Netztorsion.) A. Schönwerth.
114 *Plastic Closure of Opening in Femoral Hernia. (Neue Art eines plastischen Bruchpfortenverschlusses bei Cruralhernien.) A. Ach.
115 Retrograde Esophegoscopy with Stenosis. (Oesophagusstenosen und ihre Behandlung.) A. Ach.

94. **Persisting Thymus with Exophthalmic Goiter.**—Gebele states that seven died, being 19 per cent. of thirty-six patients with exophthalmic goiter operated on at the Munich surgical clinic. Necropsy was possible in five of the seven fatal cases and a large thymus was found in four out of the five. In six other patients with exophthalmic goiter no operation was attempted. These experiences led to considerable experimental research to determine the influence of removal of the thymus in dogs, implantation of thymus and thyroid tissue, and other experiments on these glands. The conclusions drawn from this research are that the thymus hypertrophies as a natural compensating process to do the work which the diseased thyroid is unable to accomplish; that is, there is a vicarious enlargement of the thymus. The death of persons with exophthalmic goiter and abnormally large thymus has nothing to do with the "persisting" thymus, but must be ascribed to the injury of the heart from the toxic action of the morbid thyroid secretion. He thinks the thymus is probably an epithelial gland rather than a lymphoid organ, and the more pronounced the disease in the thyroid, the larger we may expect to find the thymus. It may be examined by palpation, percussion and radiography, and if it is found enlarged it is wiser to refrain from operating in a case of exophthalmic goiter, he declares, not on account of danger from the thymus, but because its enlargement shows that the thyroid is ireparably damaged, and the Basedow syndrome in such an advanced stage that the chances for operative recovery are practically zero. At the same time, the chief index of the severity of the exophthalmic goiter is the condition of the heart.

96. **Expulsion of Foreign Bodies, Sutures, Etc.**—Baeyer has been studying the cases reported in the literature of the spontaneous expulsion of foreign bodies either by mechanical or bacterial means, and supplements the lessons thus learned by conclusions drawn from personal experimental research on the ultimate expulsion of foreign bodies incorporated in rabbits. When a foreign body is implanted in the tissues, the means to prevent its expulsion are strict asepsis, a compact rather than porous composition, or, if the foreign article is porous, it should be impregnated with an antiseptic. This induces a transient chemical suppuration which aids in walling off the foreign body; coating with vaselin or paraffin likewise answers this purpose. The bowel functioning must be regulated before and after the operation to prevent the intestinal bacteria from starting a process leading to expulsion of the foreign body. Another important point is that the foreign body should never be implanted during fever; even tonsillitis should contra-indicate it. The foreign body must not slip around in its place; to insure proper conditions in this respect long immobilization is strictly necessary. If this is impossible the serous effusion bathing the foreign body should not be drained away but left to protect it. The

incision should therefore be as far away from the foreign body as possible to prevent eventual fistula. The foreign body should be as smooth, light and small as possible and it should be encapsulated before active motion with it is allowed, as in case of an artificial tendon.

108. **Surgical Treatment of Gastric Ulcer.**—Schmitt discusses the indications for operative measures and the results in his sixty-two cases in the last five years. The list includes eight cases of duodenal ulcer. Of the total number, 51.6 per cent. have been cured; 27.4 per cent. improved, and only 4.8 per cent. failed to benefit by the operation, while 16.1 per cent. died. Two of the ten patients with cancer, out of the three treated by resection, were cured.

114. **Plastic Operation for Large Femoral Hernia.**—Ach gives an illustrated description of the technic with which he effectually closes and protects the femoral canal from the rear. He does this with a flap 10 cm. long by about 6 cm. broad, taken from the deep fascia of the thigh on the outside of the front of the thigh. This flap from the fascia lata is drawn up through an incision 1 or 2 cm. above Poupart's ligament and it is then pushed down behind the horizontal ramus of the pubis to the innominate line, so that the flap hangs down into the small pelvis behind the femoral ring like a curtain. It is held in place by being fastened across to Cooper's ligament—the fold of the fascia transversalis—and the latter is then sutured to Poupart's ligament. The front of the flap is thus turned toward the femoral canal and the rear towards the abdominal cavity. He gives the details of three cases in which he has applied this technic on middle-aged women, with eminently satisfactory results to date, over five to eleven months. This technic is designed only for very extensive hernias or for recurrence after failure of other measures.

Berliner klinische Wochenschrift, Berlin

November 14, XLVII, No. 46, pp. 2089-2132

116 Salvarsan ("606") in Syphilis. (Erfahrungen über Applikationsart und Dosierung bei Ehrlich-Behandlung.) W. Generich.
117 Biologic Research on Origin of Bone. (Herkunft von Knochen.) K. Steffenhagen and P. W. Clough.
118 Much's Granula in Lupus. (Vorkommnis des Much'schen Tuberkulosevirus bei Lupus vulgaris.) H. Boas and C. Ditlevsen.
119 Quantitative Determination of Diastase in the Urine and Its Relation to Nephritis and Diabetes. O. J. Wynhausen.
120 *Gastric Cancer in Relation to Female Genital Organs. (Magenkrebs in seinen Beziehungen zu den weiblichen Genitalorganen.) E. Runge.

November 21, No. 47, pp. 2133-2176

121 *Local and General Hypersusceptibility to Salvarsan. W. Wechselmann.
122 Salvarsan. O. Rosenthal.
123 Mercury Reactions in Secondary Syphilis. (Quecksilberreaktionen bei sekundärer Lues.) J. Baum.
124 Recurrence of Syphilis as Optic Neuritis After Salvarsan. R. Kowalewski.
125 *Typhoid Bacilli-Carriers in Insane Asylums. (Bedeutung der Bacillenträger in Irrenanstalten.) C. Neisser.
126 Sensitized Tuberculin. (Entgiftete Tuberkuline.) A. Wolff-Eisner.
127 Internal Secretion of the Ovaries and Testicles. (Innere Secretion der Keimdrüsen.) A. Münzer. Commenced in No. 46.
128 Care of Severe Wounds. (Versorgung schwerer Verletzungen.) G. W. Schiele.
129 The Cell Lipoids. (Nachweis, Vorkommen und Bedeutung der Zell-Lipoide.) C. Kaiserling.

120. **Gastric Cancer in Relation to the Female Genital Organs.**—Runge remarks that authors are almost unanimous in regarding the stomach as the site of the primary tumor when coincident ovarian cancer and gastric cancer are found. Metastasis of malignant disease in other organs seldom locates in the stomach; Mengerhausen found no metastasis in the stomach in sixty cases of malignant ovarian disease. The metastasis from the gastric cancer is especially liable to locate in the ovary as the cancer cells are moved along by the intestinal peristalsis, ascites, etc., and alight on the ovaries, the epithelium of the ovaries being particularly permeable for corpuscular elements, the vessel supply of the ovaries also favoring the development of malignant tumors. The congestions, wounds and scar formation in the ovaries connected with the ovulation process are all factors which enhance the predisposition of the ovary to cancerous growths above that of other organs. The patients are generally between 20 and 40 years old, and amenorrhea is constant when the tumors have developed at all. The symptoms on the part of the stomach are overshadowed completely by those from the ovaries. If noted, they are generally considered merely accompanying manifestations of the ovarian trouble. As a rule, both ovaries are affected. The correct diagnosis has been only rarely made; generally the gastric tumor is overlooked. In any operation on the ovaries the stomach should be carefully inspected for possible primary cancer, and the ovaries examined in all operations for gastric cancer, and they should be removed at the slightest sign of enlargement. Some authors advocate removing the ovaries always when there is gastric cancer, even when merely a palliative operation is possible. In a few cases on record a gastric cancer developed during a pregnancy and was the cause of uncontrollable vomiting. In such cases the vomiting commences in the second month of pregnancy or later, mostly in women who had no tendency to vomiting in previous pregnancies. The gastric cancer in these cases seems to run an unusually acute course and the enlarging uterus renders diagnosis difficult. Chemical examination of the stomach content is indicated in suspicious cases. Polano advocates immediate interruption of the pregnancy, followed by removal of the gastric tumor when a cancer is discovered in the stomach of a pregnant woman, although cases are known in which a healthy child was born at term even under these conditions.

121. **By-Effects of Salvarsan.**—Wechselmann supposed it was merely a casual coincidence that a febrile sore throat developed a week after injection of salvarsan in some of his patients, until the regularity of the occurrence led to the discovery that it was an enanthem similar to the exanthem which he observed in a number of others, fully 1 per cent. of his patients exhibiting these by-effects. The remarkable feature about them is that they do not develop until after an incubation averaging nine days, these severe symptoms thus appearing when the main mass of the drug has been eliminated or walled in by a tough wall of tissue. He is convinced that these by-effects are similar in nature to the manifestations of serum sickness, which do not develop until the serum is no longer present in the body as such, and which are explained as the result of the reciprocal action between the organism and the antigen. The same explanation applies also, he thinks, to the Herxheimer reaction. He gives the temperature curves of some typical cases. There did not seem to be any increase in the reaction after repetition of the dose, but he warns that it is wiser to refrain from repeating the dose just at that critical period, from the eighth to the tenth day, when the organism seems to be in an especially sensitive state. To date, he states, these manifestations of hypersusceptibility have proved transient and harmless, but they suggest caution in case of weak heart or other depressing factors. The exanthem appeared coincident with a temperature of 104 F. and resembled that of measles or of scarlet fever, and was accompanied by gastric symptoms, diarrhea, thirst, coated tongue and occasional vomiting; there was much malaise, but the pulse was good and the urine normal. The febrile and other manifestations were still more severe when the enanthem was localized in the throat; it is possible that the gastrointestinal mucosa may be likewise affected. The temperature kept high for five days in one case reported.

125. **Typhoid Bacillus-Carriers in Insane Asylums.**—Neisser reports some experiences which seem to confirm the assumption that insane asylums are peculiarly liable to shelter bacillus-carriers, but inquiry among fifty other German institutions of the kind showed that an epidemic of typhoid had not been known in them for years. Complete isolation of bacillus-carriers seems to be the only means to control contagion from this source, he says. At the Bunzlau asylum in his charge, every new inmate is examined for typhoid bacilli and a special pavillion is devoted to the patients with positive findings. At Emmendingen, during the last two years, eight of the attendants and three of the servants were found to harbor typhoid bacilli. Neisser classes dysentery with typhoid in the necessity for prophylactic measures. He condemns in conclusion the exaggerated dread of bacillus-carriers as the danger of contagion from them cannot be very grave, or more of it would occur.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 10, XL, No. 32, pp. 1065-1096

130 *Momburg Belt Constriction for Post-Partum Hemorrhage. (Zur Behandlung der Post-partum-Blutungen durch künstliche Blutleere der untern Körperhälfte nach Momburg.) A. v. Reding.

131 *The Alleged Harmless Methods of Anesthesia. Dumont. Commenced in No. 31.

130. **Treatment of Post-Partum Hemorrhage with Momburg Belt Constriction.**—Reding applied Momburg's technic of constriction of the waist with rubber tubing in thirty cases to arrest post-partum hemorrhage and in twenty-eight cases the benefit was prompt and gratifying. The bleeding stopped at once and the uterus was stimulated to vigorous contraction. This gave time for tranquil preparation for an application of any other measures deemed desirable. This is one of the greatest advantages of the Momburg technic in general practice, as time is gained. Another advantage is that lacerations can be sutured with slight loss of blood. The women do not seem to mind the constriction; only in three cases were there complaints of pains in the legs. The anemia alone is liable to induce such pains. No other by-effects were noted in these twenty-eight cases, but in two others the procedure had little effect, although both patients were thin and no reason for the failure of the constriction could be discovered. In the first case the hemorrhage was not controlled until after the uterus had been tamponed. In the other case the woman was a iv-para, aged 25, with placenta prævia. The bleeding continued under the Momburg belt and after it was removed and applied again, and persisted even after tamponade. Necropsy failed to reveal the slightest injury from the Momburg constriction. In a third case of placenta prævia the extreme anemia was the primary cause of the collapse that followed loosening of the constricting tube. There is no doubt that the woman would have died without the constriction, which should be weighed in the balance in passing judgment on this collapse for which the Momburg constriction was evidently the occasional cause. His final conclusions from these experiences and from the reports of others are that the Momburg technic is entirely harmless for healthy women who are not very anemic. It should be applied as early as possible in cases of post-partum hemorrhage, before the women have lost too much blood. Extreme caution is necessary with much anemia or heart disease. He thinks that raising the pelvis before applying the tube or before loosening it, when there has been great loss of blood, prevents threatening anemia of the brain and heart, but the possibility of air embolism should be borne in mind and no intra-uterine manipulations should be done while the pelvis is raised. He remarks in conclusion that the Momburg method is not infallible, but it adds one more to our means of combating post-partum hemorrhage.

131. **General Anesthesia.**—Dumont discusses the technics that have been lauded recently as harmless and shows that the authors draw the picture in too favorable colors, especially Jonnesco with his "high spinal technic." Recent statistics have shown that twelve fatalities have been recorded in 2,400 applications of spinal anesthesia; that is, one death in 200, besides five cases of abducent paralysis and four of asphyxia, yielding to artificial respiration, while the postoperative pneumonias amounted to 0.7 per cent. He declares that the problem is not to search for new methods but to teach and practice better technic for the old and tried methods.

Deutsche medizinische Wochenschrift, Berlin

November 24, XXXVI, No. 47, pp. 2177-2224

132 *Origin and Treatment of Detachment of the Retina. (Netzhautablösung.) C. Horstmann.

133 Sphygmobolometry. (Weiterer Ausbau der Sphygmobolometrie oder energetischen Pulsuntersuchung.) H. Sahli.

134 Relation of Heart Sounds and Murmurs to the Electrocardiogram. (Beziehungen der Herztöne und Herzgeräusche zum Elektrokardiogram.) O. Weiss and G. Joachim.

135 Action of Salvarsan ("606") on the Eye. (Wirkung des Dioxydiamidoarsenobenzols auf das Auge). W. Wechselmann and W. Seeligsohn.

136 Vicarious Muscular Action. (Ueber stellvertretenden Muskelersatz.) H. Kron.

137 Case of Paratyphoid Osteoperiostitis. V. Jensen and A. Kock.

138 *Rhythmic Compression of the Heart in Apparent Death. (Anwendung rhythmischer Herzkompression beim Wegbleiben der Kinder und ähnlichen Zuständen.) A. Japha.

139 Economy in Dressings. (Sparsame Verbände, vereinfachtes Verbinden.) Waldow.

140 Microphotography. Berg.

132. **Detachment of the Retina.**—Horstmann remarks that the retina becomes detached only when the pressure from the vitreous humor becomes reduced or a stronger counter-pressure from the other side pushes up the retina from below. He advocates recumbency, moderate diaphoresis, subconjunctival injections of salt solution and a light compressing dressing in treatment of detachment of the retina. If several months of this treatment do not induce marked improvement, operative treatment may be proposed, although the prospects are uncertain and dubious. The general treatment above outlined, Uhthoff estimates, will cure in 20 per cent. of the cases; Schmidt-Rimpler cured fourteen and materially improved twenty-eight out of seventy-six patients, and Horstmann himself has cured with good vision 14 per cent. of fifty patients. Not until medical measures have completely failed should an operation be considered. He warns against every method which requires an injury of the retina or vitreous body.

138. **Rhythmic Compression of the Heart for Apparently Moribund Children.**—Japha reports two cases in which apparently moribund infants were treated by rhythmic compression of the heart and revived. The yielding thorax of a child renders this external manipulation more efficient than with the rigid chest of the adult. He does not ascribe the effect to the mechanical influencing of the circulation, but to reflex action. In the first case described a twelve-day infant with signs of heatstroke, unconscious, deeply cyanotic, with foam at the mouth, the pulse scarcely perceptible, respiration 80 to the minute, improved rapidly under the rhythmic compression of the heart and soon recovered after injection of camphor, and cold douches in a warm bath. The other child was a month old and apparently moribund, cyanotic, the temperature 43.3 C. (110 F.), the heart-rate 180, the breathing reduced to gasps at long intervals. Under the compression of the heart and a bath with a cold douche, the temperature dropped to normal and all symptoms soon subsided. Both children are now nearly 2 years old and apparently normal in every respect. The thumb of the right hand is placed between the sternum and the apex and the chest-wall is pressed in rhythmically and deep, about 120 times in a minute (*120 rhythmische Herzstösse*). He thinks that this measure might prove effectual in pneumonia, in spasm of the glottis and in chloroform syncope. Under the rhythmic compression the pupils contract, the face grows less livid and a normal inspiration follows. He has been applying it for years for spasm of the glottis and has had no further fatalities from this cause, and he commends this measure in all such catastrophes and in those with anesthetics. What good does it do, he asks, to exhibit ether or chloroform when in consequence of the spasmodic closure of the glottis the patient is unable to breathe? The rhythmic compression of the heart is more effectual in many cases than artificial respiration. (In this connection we quote a recent case of successful massage of the heart in an apparently fatal early chloroform accident. The patient was a robust man and the operator, J. W. Milne, at once cut into the abdomen to the left of the xyphoid cartilage, and wormed his thumb down to the peritoneum and up through the diaphragm margin till he had it well behind the heart and the other fingers over the heart outside. He says in his communication to the *British Medical Journal*, Nov. 19, page 1657, "I now began to squeeze the heart as one does the bulb of an enema syringe, and never shall I forget the kick and wobble, or rather thrill, that the heart gave in response to the very first compression. It reminded me of the feel of a trout when one grabs it below a bank or boulder. I kept pumping away and all the symptoms disappeared, the first symptom of revival being contraction of the pupil. The patient to this day wonders why the upper wound was necessary to remove one little appendix".)

Medizinische Klinik, Berlin

November 27, VI, No. 48, pp. 1885-1920 and Supplement

141 Diet in Health Resorts and Institutions. (Diät und Mineralwässer; Diätkuren. II.) A. Strasser.

142 Urotropin in Treatment of Meningitis, Especially in Children. J. Ibrahim.

143 Plastics During and After Operations on the Ear. Preysing.

144 Technic of Intravenous Injection of Salvarsan. (Zur Technik der intravenösen Hatainjektion.) H. Assmy.

145 Incarcerated Hernia. (Pathogenese, Diagnose und Therapie der eingeklemmten Hernien.) A. Most.

XUM

Monatsschrift für Kinderheilkunde, Leipsic

November, IX, No. 7, pp 343-382. Last indexed December 24, p. 2276

146 Physiologic Variations in the Leukocyte Count in Breast-Fed Infants. W. Wernstedt.
147 Spasmodic Cough and Spasmophilia. (Pertussis, bezw. pertussis-ähnlicher Husten, und spasmophile Diathese.) W. Wernstedt.
148 Idiosyncrasy to Cow's Milk in Infants. (Zur Frage der Kuhmilchidiosynkrasie im Säuglingsalter.) W. Wernstedt.
149 Treatment of Furunculosis in Infants. E. Schloss.
150 Importance of Carbohydrates with Fat in Food. (Bedeutung der Kohlehydrate bei fettreicher Ernährung.) H. Helbich.
151 Ash in Brain with Spasmophilia. (Aschgehalt in den Hirnen Spasmophiler.) E. Aschenheim.
152 *Uncontrollable Vomiting with Congenital Megacolon. (Hirschsprungsche Krankheit unter dem klinischen Bilde unstillbaren Erbrechens.) H. Kleinschmidt.

152. **Fatal Vomiting with Congenital Megacolon.**—Nothing during life suggested Hirschsprung's disease and nothing could be discovered to explain the incessant vomiting in an infant about eight months old, until necropsy revealed typical congenital megacolon, the abnormally long and large bowel having become kinked and twisted.

Münchener medizinische Wochenschrift

November 22, LVII, No. 47, pp. 2449-2504

153 *Necessity for Caution in Administering Iodin. L. Krehl.
154 *Intermittent Limping in Connection with Tobacco. (Zur Klinik des intermittierenden Hinkens.) W. Erb.
155 *Recurring Effusion with Neuralgia of Joints. (Zur Aetiologie des rezidivierenden Gelenkhydrops der Gelenkneuralgie.) C. Garrè.
156 Participation of Blood-Vessels in Movement of the Blood. (Anteil der Blutgefässe an der Bewegung des Blutes.) J. Strasburger.
157 Modern Arsenic Treatment of Syphilis. K. Zieler.
158 Technic for Injection of Salvarsan. (Einfache und praktische Injektionsmethode des Ehrlich Hata-Präparates 606.) A. Pasini.
159 Roentgen-Ray Diagnosis of Callous Gastric Ulcer. M. Haudek.
160 Matrimony for Girls with Heart Disease. (Zur Frage der Ehe bei herzkranken Mädchen.) R. T. Jaschke.
161 Operative Cure of Cerebellar Cyst. R. Cassirer and V. Schmieden.
162 Permanent Cure of Carcinomas After Radium Exposures. A. Exner.
163 Hyoscyamus Poisoning. (Eine Massenvergiftung durch den Genuss der Wurzel von Hyoszyamus niger.) Philippi and Mühle (Davos).
164 Improved Rapid Azure-Eosin Romanowsky Stain. G. Giemsa.
165 Simplified Technic for Wassermann Reaction. E. Steinitz.
166 Operation for Phimosis. Drüner.
167 Fenestrated Sound for Diagnosis of Esophageal Cancer. (Einfaches diagnostisches Hilfsmittel bei Speiseröhrenkrebs.) Brünings.

153. **Necessity for Caution in Administration of Iodin.**—Krehl warns that there is necessity for great caution with iodin, especially in cases of arteriosclerosis with enlargement of the thyroid. If there is the slightest sign of perverted thyroid functioning it is better to refrain from it entirely. He has been studying this subject for eight years at Heidelberg, where thyroid disease is common and in many cases the first symptoms of toxic thyroid functioning had developed after a physician had prescribed iodin. In a number of cases a patient with goiter grew very thin and hidden cancer was assumed, but hyperfunctioning on the part of the thyroid was the real cause of the cachexia; it always proved that the patient had been taking iodin, possibly even for a very short time, and that his emaciation or restlessness, excitability or lassitude, dated from that time. Some of the patients had apparently only nervous or psychic disturbances. In some cases there was an apparently causeless fever; this is much more common with thyroidism than physicians generally appreciate. With the iodin cachexia the retention of a good appetite is an important differential point. With arteriosclerosis and apparently normal thyroid functioning, iodin is a useful measure, but its administration should always be under medical supervision. Thyroidism liable to be brought on by iodin does not cease when the iodin is suspended, and it may possibly progress to a serious form as in several of his patients, who had taken but 1 gm. of potassium iodid daily for two weeks, on account of existing or supposed arteriosclerosis, in whom severe thyrotoxic conditions developed.

154. **Intermittent Limping.**—Erb reports that he has had fifteen additional patients with this affection since his last communication recently reviewed in these columns, and states that 14 per cent. of his total material of fifty patients with arteriosclerotic dysbasia were excessive smokers, consuming from 50 to 150 cigarettes a day, and 44 per cent. were great smokers. Thus the abuse of tobacco was evident in 58 per cent. of his fifty cases, and there was a large proportion of moderate smokers among the rest. In 300 other patients, free from intermittent limping, only 19 per cent. were great smokers, showing the large preponderance of excessive smokers among the patients with arteriosclerotic dysbasia. He states further that 84 per cent. of all his patients who were excessive smokers had unmistakable signs of arteriosclerosis.

155. **Recurring Effusion in the Joints with Joint-Neuralgia.**—Garrè reports some cases of supposed neuralgia in a joint which proved to be the result of a minute focus in the adjoining long bone, so small that it escaped all detection. In one case the neuralgic pains in the knee for six years were finally traced to a minute process in the epiphysis, scarcely as large as a bean and visible with the Roentgen rays only from the front. A splint removing the weight from the knee and worn for three years seems to have entirely cured the trouble. The neuralgic pain in the knee returned twice when the splint became defective but subsided at once when it was repaired. In another case an effusion in the knee dominated the picture at last after six years of recurring neuralgia; then a minute focus was discovered and all trouble was cured by curetting the osteomyelitic lesion. In both these cases there had been a slight trauma in the knees years before. In a third case the patient's complaint of an industrial trauma had been disregarded until a focus of periostitis became manifest and a minute shadow was seen with the Roentgen rays 1 cm. below the articular cartilage. In these and in a fourth case the tiny focus in the epiphysis was the sole localization of the pyemic bone process which at no time in its course had presented the typical picture of osteomyelitis.

Wiener klinische Wochenschrift

November 17, XXIII, No. 46, pp. 1623-1666

168 *Clinical Diagnosis of Cancer. R. Paltauf.
169 Xanthelasma and Jaundice. F. Chvostek.
170 *Temporary Sterilization of Women. C. J. Bucura.
171 Influence of Menstruation on the Neuropsychic Sphere of Women. J. v. Jaworski.

November 24, No. 47, pp. 1667-1702

172 *Salvarsan ("606") in Syphilis. E. Finger.
173 *Operative Treatment of Acute and Chronic Pancreatitis. J. Goblet.
174 Isolation of Oxybutyric-Acid Producers in Stools. (Studien über Darmfäulnis. VII.) A. Rodella.

168. **Clinical Diagnosis of Cancer.**—Paltauf's article was read at the recent cancer conference at Paris. He reviews the various new methods for clinical diagnosis of cancer, especially gastric cancer, stating that the precipitin and complement-binding reaction, as also the tests based on anaphylaxis, have given negative results which harmonize with the fact that no one has ever succeeded in determining the presence of a foreign albumin in the tissues of malignant tumors. More important is E. Freund's discovery that the serum of normal human beings has a destructive action on cancer cells, and he traced this destructive action to the lecithin element. He discovered further that not only is the serum in cases of cancer lacking in this lecithin element, but there seems to be also some substance in the cancer serum which protects the cancer cells. He further found that the cancer serum induces precipitation in cancer extract; precipitation is not obtained under other conditions. He found this turbid precipitation in the serum in fifty-four cancer patients, while it was constantly absent in the serum from forty-five patients with various non-cancerous affections. Paltauf regards these findings as very important. They are confirmed by C. Neuberg's discovery of the same phenomenon by another route, namely, the clearing up of a suspension of cancer cells when normal serum is added to it. Ascoli's meiostagmin reaction seems also to have an indirect connection with it as the physical-chemical changes in the solution are the manifestations of this difference between cancerous and normal serum. The concordant findings of three research workers by different routes are highly remarkable. Freund regards his findings as the expression of a predisposition on the part of cancer patients. On the other hand, the healthy possess an immunity

to cancer—their serum destroys the cancer cells—but this property may be gradually lost and may finally yield to extreme susceptibility as with universal metastasis. Freund's findings show that the euglobin in the blood of cancer patients behaves towards the lipoids differently from normal serum. His findings further explain certain histologic processes with incipient carcinoma and harmonize with pathologic and anatomic observations. They may possibly throw light not only on the clinical diagnosis but on the whole cancer problem.

170. **Temporary Sterilization of Women.**—Bucura suggests slitting the broad ligament just below the ovary and burying the latter under the peritoneum and suturing the peritoneum above it, so that the ovary is completely excluded from the region of the tube and uterus. Success depends on the minutely careful suturing, so that no ovum can find its way out of the pocket in which it is buried. If at any future time the conditions permit conception, it would be an easy matter to release the ovary which would then resume its normal functioning as nothing has been done to interfere with its integrity. He has confirmed the feasibility of the operation on animals, but has not yet applied it in the clinic. The article is illustrated.

172. **By-Effects with Salvarsan.**—Finger states that in the five months since he has been using salvarsan 170 syphilitics have been treated with it and all but thirty-eight have been kept under supervision. The results of treatment do not indicate, he says, that the salvarsan has any more effectual action on the syphilitic process itself than the usual methods of treatment, while the harmlessness of the drug has by no means yet been demonstrated. In his own experience, four of the patients presented serious disturbances on the part of the eyes and three others disturbances in the internal ear. The first patient was a robust girl of 19, and two months after the injection of salvarsan (which had been made two months after primary infection), she returned complaining of headache, vertigo and impaired vision in the right eye. As the Wassermann reaction was positive, she was given another injection of salvarsan, followed by mercury and iodid, but there has been no improvement in the condition, and the left optic nerve now also shows signs of neuritis. Incipient atrophy of the optic nerve was also discovered in another patient who had seemed to be much benefited by the injection of salvarsan after two years of the usual measures had proved inefficient to cure the malignant syphilis; the treatment had included thirty injections of arsacetin and eighteen of enesol. Three months after the injection of salvarsan, incipient atrophy of the optic nerve on both sides became manifest. In the fourth case the syphilis was of five months' standing when the salvarsan was injected, and three months later there were evidences of right peripheral choroiditis with central turbidity of the vitreous body humor. In two of the cases the Wassermann reaction had become negative. Wechselmann has also reported choroiditis, paresis of the ocular muscles and iritis, as remarkable forms of recurrence of the syphilis a few weeks or months after the salvarsan injection. Fischer has reported severe papulous iritis in four cases and neurochorioretinitis in another case from two to three months after the injection. All these are occurrences which are never observed under ordinary mercurial treatment in this early stage of syphilis. The same can be said of Finger's three cases in which the acoustic nerve was affected. In the first with nystagmus, vertigo and typical tendency to fall, the hearing was intact, indicating that the vestibular nerve had been alone shut off in some way. The symptoms all passed away in a few days, but in the two other cases the trouble was evidently in the true nerve of hearing and the deafness and vertigo have persisted unmodified to date. In these three patients the Wassermann reaction has been persistently negative and the auditory disturbances did not develop until from nine weeks to nearly four months after the injection in the last two cases, but they came on the day after the injection in the case in which they proved transient. His experience shows, he says, that salvarsan has great symptomatic efficiency, but that it does not eradicate the disease.

173. **Treatment of Pancreatitis.**—Gobiet reports a case of severe acute pancreatitis in which the patient, a woman of 57, was promptly cured by exposure of the pancreas by incision and tamponing. He calls attention to the isolated distention of the transverse colon which occurred as an early symptom in this case. Discovery of this should suggest the possibility of pancreatic disease and compel exposure of the gland even when the abdominal syndrome shows no other symptoms pointing to pancreatitis. With chronic pancreatitis without gall-stones but with stagnation of bile, cholecystenterostomy should be done. If there are gall-stones the indications for them dominate the syndrome, but whenever the pancreas is found enlarged with patches of induration, decapsulation and incision and partial excision with drainage should supplement the operation on the biliary apparatus. In the rare cases of inflammation of the body of the pancreas without gall-stones and stagnation of bile, the decapsulation and incision of the pancreas are sufficient.

Zentralblatt für Chirurgie, Leipsic

November 18, XXXVII, No. 46, pp. 1465-1488

175 *Aspiration Drainage of Bladder. (Aspirationsdrainage der Blase.) A. Barth.
176 *Operation for Exstrophy of Bladder. F. Fink.
177 *Diagnosis and Treatment of Kidney Tuberculosis. (Nierentuberkulose.) C. Longard.

175. **Aspiration Drainage of the Bladder.**—Barth has found even the retention catheter unsatisfactory for draining the bladder after operations on this organ, especially after prostatectomy or stone operations on an infected bladder. Even siphon drainage requires the closest supervision. A much simpler and more reliable measure is the use of a Bunsen aspirating jar insuring regular, constant aspiration under mild negative pressure. He uses two jars connected with a long tube entering close to the bottom of each; one stands on the floor, the other on a stool or table. When the higher is filled with water and plugged with a rubber stopper, the water flowing into the lower jar leaves a vacuum, that is, negative pressure, in the higher jar. A glass tube through the rubber stopper is connected by a rubber tube with the retention catheter, or a receiving jar with two tubes in the stopper may be interposed. The urine as it is aspirated drops regularly into the first, interposed, jar and a glance at this jar shows the color, amount and regularity of the drainage. A difference of about 18 or 19 inches between the levels of the vacuum jars is ample for the aspiration. By this means the urine is collected neatly and without odor. The receiving jar can be removed and cleansed every twenty-four hours without interfering with the vacuum, by clamping the tube beyond. This contrivance will be found useful also for drainage of other organs. In one case an elderly man with a fistula after perineal prostatectomy, which absolutely refused to heal, was finally cured under this aspirating drainage through a retention catheter.

176. **Operation for Exstrophy of the Bladder.**—Fink utilizes the appendix for the outlet to the new bladder made by drawing up the bladder tissue present. This has the advantage of using the anatomically and physiologically normal bladder tissue. The appendix provides an outlet for the urine into the cecum, the valves serving to prevent penetration of gas and feces into the bladder. He has applied the operation in only one case and the much debilitated child did not survive it. He has not had opportunity since, but he thinks that this technic has several advantages, not the least of which is the continence which it promises. If infection should occur, the appendix could be drawn out through the skin.

177. **Treatment of Renal Tuberculosis.**—Longard comments on the mishaps in treatment of renal tuberculosis, and thinks that they might be avoided with the technic which he has applied in two cases. The patients were able to be up and about in ten days. The question is to determine which kidney is the diseased one, or, if both are affected, has one sufficient functionally capable parenchyma to permit the removal of the other? None of the ordinary technics allows a reliable answer to these questions; consequently he advocates and practices the following method: (1) exposure of the presumably sound kidney, with reposition and primary suture if found sound; (2) exposure of diseased kidney, loosening, ligating and severing the vessels; (3) detaching the ureter

towards the small pelvis, still connected with the kidney; (4) incision parallel to Poupart's ligament through which the kidney with its ureter is drawn; here the ureter is sutured and the wound sutured around it; (5) primary suture of the other incision, and (6) 4 or 5 cm. from the wound the ureter is ligated and the kidney cut from it with the actual cautery.

Nordiskt Mediciniskt Arkiv, Stockholm

XLIII, Internal Medicine, No. 2. Last indexed Nov. 12, p. 1772

178 *Influence on Growth and Ossification of Exophthalmic Goiter and Analogous Conditions. I. Holmgren. Commenced in No. 1.

179 *Acute and Subacute Dilatation of the Stomach. O. Hanssen.

178. **Influence on Ossification and Stature of Thyroid Hyperfunctioning.**—Holmgren presents and discusses about all that is known in this line to date, reviewing 353 articles and his own wide experience. It seems evident that the thyroid has control of the growth of the bones, and that infections, by their action on the thyroid, are able to promote the growth of the bones in length and thus increase the stature. In his own experience a blonde complexion or unusual height for the age or both almost invariably accompanied thyroid hyperfunctioning. The 240-page article is in German.

179. **Acute Dilatation of the Stomach.**—Hanssen remarks that the frequency of acute dilatation of the stomach as a postoperative complication has brought it into the limelight in the last decade, but cases due to overfilling of the stomach were described centuries ago. He tabulates ten postoperative cases from recent Norwegian literature, and mentions three from Sweden and two from Finland; no case has been published in Denmark. Hanssen has encountered one case himself, and gives the details of this and of ten other cases at the Christiania general hospital. The patients were four women and seven men, aged from 15 to 37; two were healthy when the acute dilatation occurred, and in two other cases the dilatation occurred after an operation on the knee. All the patients died in from one to three days. The correct diagnosis was made in only two cases; in two the trouble was supposed to be poisoning from the antiseptic that had been used. In the others ileus or peritonitis was assumed. It seems to be the general rule that the first case, at least, of acute dilatation of the stomach that occurs in a hospital is never recognized as such. He lays great stress on careful preparation for operations and careful diet during convalescence from acute diseases, especially typhoid, as important in prophylaxis. If the dilatation has occurred, rinsing out the stomach, resting it completely afterward, and stimulants, especially saline infusion, are the main points in treatment. Neck advocates lavage of the stomach three times a day as the general rule. It may be necessary to raise the pelvis to facilitate the outflow of the fluid. Placing the patient in the ventral decubitus has proved effectual in the experience of some clinicians, but in Rosenthal's case harm resulted, and Borchardt has reported aggravation of symptoms from the "cow position" (*Lage à la vache*), recommended by Albrecht. Landau, Hanssen quotes, compares this position treatment with taxis in hernia. Kelling recommends raising the pelvis, the patient lying on the left side. Engström suggests that possibly good might result from introducing a speculum into the vagina, suddenly spreading it and thus pushing the intestines out of the small pelvis. Fürstner has reported success in some mild cases with Faradization and Erdmann with cold packs. Atropin has been recommended, but Hanssen protests that this has a weakening influence on peristalsis. In an operative case reported by Lennander and one by Sommarin the acute dilatation of the stomach was found accompanied by volvulus of part of the small intestine. In an additional case reported by Hanssen in which the acute dilatation came on a few days after a cancer operation, the symptoms subsided under lavage of the stomach and saline infusion, but there was an acute exacerbation nine days later and necropsy disclosed volvulus of the jejunum. Kehr and Tschudy, among others, have been successful with gastro-enterostomy, but most writers warn against operative interference. An early diagnosis and prompt measures for relief will generally forestall the necessity for an operation. The article is in German.

Books Received

Books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

LA STENOSE DU PYLORE, PAR HYPERTROPHIE MUSCULAIRE CHEZ LES NOURRISSONS. Par M. Pierre Fredet, Chirurgien, et M. Louis Guillemot, Médecin des Hôpitaux de Paris. VI cong. de gynéc., d obst., et de paediat., tenu à Toulouse en Septembre, 1910. Paper. Pp. 83, with illustrations. Toulouse: Librairie de l'Université, 14, rue des Arts (Square du Musée), 1910.

EMANUEL SWEDENBORG'S INVESTIGATIONS IN NATURAL SCIENCE AND THE BASIS FOR HIS STATEMENTS CONCERNING THE FUNCTIONS OF THE BRAIN. By Martin Ramstrom. (Till Kungl. Vetenskaps Societeten I Uppsala vid dess 200-Arsjubileum af Uppsala Universitet. Den 19 November, 1910.) Paper. Pp. 59, with 4 illustrations. University of Uppsala, 1910.

REPORT ON HIGHER EDUCATION IN THE STATE OF NEW YORK. For the School Year ending July 31, 1909. Reprinted from the sixth annual report of the Commissioner of Education of the State of New York as submitted to the Legislature Jan. 24, 1910. Paper. Pp. 516. Albany: New York State Education Department, 1910.

TASCHENBUCH DER PATHOLOGISCHEN ANATOMIE. Von Dr. Edgar Gierke. I. Allgemeiner Teil. II. Spezieller Teil. Dr. Werner Klinkhardt's Kolleghefte. Heft 5 and 6. Paper. Price, 3 and 4 marks. Pp. 143, with 69 illustrations, and 207, with 58 illustrations. Leipsic: Dr. Werner Klinkhardt, 1911.

MOTO-SENSORY DEVELOPMENT. Observations on the First Three Years of a Child. By George V. N. Dearborn, Professor of Physiology in the Tufts College Medical and Dental Schools, Boston. Educational Psychology Monographs. Cloth. Price, $1.50. Pp. 215. Baltimore: Warwick & York, 1910.

THE PROPHYLAXIS AND TREATMENT OF INTERNAL DISEASES. Designed for the Use of Practitioners and of Advanced Students of Medicine. By F. Forchheimer, M.D., Professor of Medicine, Medical College of Ohio. Second Edition. Cloth. Price, $5. Pp. 172. New York: D. Appleton & Co., 1910.

CLINICAL PATHOLOGY IN PRACTICE. With a Short Account of Vaccine-Therapy. By Thomas J. Horder, M.D., Medical Registrar and Demonstrator of Morbid Anatomy at St. Bartholomew's Hospital. Cloth. Price, $3. Pp. 216, with 6 illustrations. New York: Oxford University Press, 1910.

HAUT- UND GESCHLECHTSKRANKHEITEN. Von Dr. Felix Pinkus, Privatdozent. Leitfäden der praktischen Medizin, herausgegeben von Prof. Dr. Ph. Bockenheimer, Berlin. Band II. Paper. Price, 7 marks. Pp. 272, with 68 illustrations. Leipsic: Dr. Werner Klinkhardt, 1910.

UEBER DIE VERSCHIEDENEN LYMPHOIDEN ZELLFORMEN DES NORMALEN UND PATHOLOGISCHEN BLUTES. Von A. Pappenheim in Gemeinschaft und Mitarbeit mit A. Ferrata. Paper. Price, 6 marks. Pp. 132, with illustrations. Leipsic: Dr. Werner Klinkhardt, 1910.

A MANUAL OF PHARMACY FOR PHYSICIANS. By M. F. DeLorme, M.D., Lecturer on Pharmacy and Pharmacology, Long Island College Hospital, New York. Second Edition. Cloth. Price, $1.25 net. Pp. 199, with 19 illustrations. Philadelphia: P. Blakiston's Son & Co., 1910.

HANDBUCH DER BIOCHEMIE DES MENSCHEN UND DER TIERE. Herausgegeben von Dr. Carl Oppenheimer in Berlin. Twenty-Sixth and Twenty-Seventh Instalments. Paper. Price, 5 marks each. Pp. 241 to 400 and 401 to 595. Jena: Gustav Fischer, 1910.

INNERE MEDIZIN. Von Dr. Georg Zuelzer. I. Teil. Leitfäden der praktischen Medizin, herausgegeben von Prof. Dr. Ph. Bockenheimer, Berlin. Band III. Paper. Price, 7.50 marks. Pp. 330, with illustrations. Leipsic: Dr. Werner Klinkhardt, 1911.

LEHRBUCH DER UROLOGIE UND DER KRANKHEITEN DER MÄNNLICHEN SEXUALORGANE. Von Dr. Alfred Rothschild, Spezialarzt für Urologie in Berlin. Paper. Price, 13.50 marks. Pp. 522, with 162 illustrations. Leipsic: Dr. Werner Klinkhardt, 1911.

SECURING EFFICIENCY IN RAILROAD WORK. Story of an attempt to apply Scientific Management to Some Departments. A Lecture delivered at Harvard Nov. 16, 1910. Paper. Pp. 38. New York: Harrington Emerson, 30 Church Street.

FOURTH REPORT OF THE BABIES' DISPENSARY AND HOSPITAL OF CLEVELAND. For the Year Ending Sept. 30, 1910. Paper. Pp. 47, with illustrations. The Babies' Dispensary and Hospital, 2500 East Thirty-Fifth Street.

PRINCIPLES OF THERAPEUTICS. By A. Manquat, National Correspondent to the Académie de Medicine. Translated by M. Simbad Gabriel, M.D. Cloth. Price, $3 net. Pp. 298. New York: D. Appleton & Co., 1910.

PUERPERAL INFECTION. By Arnold W. W. Lea, M.D., Lecturer in Obstetrics and Gynecology, the University, Manchester. Cloth. Price, $9. Pp. 384, with illustrations. New York: Oxford University Press, 1910.

CARE OF THE PATIENT. A Book for Nurses. By Alfred T. Hawes, M.D. Cloth. Price, $1 net. Pp. 173, with 6 illustrations. Philadelphia: P. Blakiston's Son & Co., 1911.

TWENTY-FIRST ANNUAL REPORT STATE OF NEW YORK STATE COMMISSION IN LUNACY. Statistics of the Insane, 1908-1909. Paper. Pp. 85, with illustrations.

ANNUAL REPORT OF THE MOUNT SINAI HOSPITAL OF BOSTON. For the Eighth Year. Jan. 1 to Dec. 31, 1909. Paper. Pp. 29. 17 Staniford Street, Boston.